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146 PAGES OF ICONIC GAMES

ANNUAL

Digital Edition

FUTURE

VOLUME 8

WELCOME TO THE

retro* GAMER ANNUAL

One of the great things about working on a magazine like **Retro Gamer** is that there are always new stories to cover and new tales to tell. Retro gaming has never been as popular as it is today and we've been there every step of the way to cover some of the greatest games of all time, from *Pac-Man* and *Turrican*, to *Sonic The Hedgehog* and iconic systems like the Nintendo 64, to modern classics like *Resident Evil 4* and *Prince Of Persia: The Sands Of Time*. As contemporary consoles become old, they feed the retro community and give us even more games to become nostalgic over. As a result, the magazine now covers a large number of eras from the Eighties when gaming was still in its infancy, to the mid-Noughties when consoles like the PlayStation 2 and Xbox were in their prime. Our latest annual covers some of the best games and systems from this era. So what are you waiting for? Put the kettle on, put your feet up and enjoy the very best articles from the last year of the mag.

FUTURE

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Printed by William Gibbons, 26 Planetary Road, Willenhall, West Midlands, WV13 3XT

Distributed by Marketforce, 5 Churchill Place, Canary Wharf, London, E14 5HU
www.marketforce.co.uk Tel: 0203 787 9001

Retro Gamer Annual Volume 8 (GAB4061)
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Future plc is a public company quoted on the London Stock Exchange (symbol: FUTR)
www.futureplc.com

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Part of the

bookazine series

retro GAMER ANNUAL

THE ULTIMATE GUIDE TO CLASSIC VIDEOGAMING

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Back To The 90s

WORDS BY
NICK THORPE, LEWIS PACKWOOD & ADAM BARNES

FEW ERAS OF GAMING EXCITED LIKE THE NINETIES DID. THE DECADE SPANNED SEVERAL GENERATIONS OF HARDWARE, INTRODUCED A COLOURFUL RANGE OF CHARACTERS AND SAW GAMES GO TRULY MAINSTREAM. JOIN US THEN, AS WE COVER TEN YEARS OF GAMING EXCELLENCE

From the earliest days of the coin-op market to today's world of blazing fast SSDs and ray-tracing, there has always been someone ready to tell you that *their* game, *their* hardware, is the next big thing. Videogames are always evolving, after all. But for those of us who lived through the Nineties, it's hard to deny that everything just seemed to move that little bit quicker, as the decade brought about possibly the most astonishing changes in gaming history.

Across the world, the console market became the focus of the gaming industry. Sega and Nintendo clashed with their 16-bit machines, creating a fierce rivalry that brought out the best in both manufacturers and made console development more attractive for third parties. Meanwhile, the handheld market that emerged in the final months of the Eighties truly took off, allowing gamers to take their hobby out on the road in a meaningful way. The arcades experienced a renaissance too, thanks to *Street Fighter II*'s competitive revolution and the fighting game boom that followed.

The middle of the decade was also characterised by the race to succeed traditional graphical technologies. For a time it looked as though the large capacity of CD-ROMs had convinced the industry that interactive video was the way forward, and Virtuality was extremely keen to sell its pods as the future of arcade gaming. But the true leap forward was the development of 3D graphics hardware that was fast enough to handle action games, initially as part of an arcade arms race between Sega and Namco, and by the middle of the decade in home consoles too as electronics giants like Panasonic and Sony saw an opportunity in the market.

It's fair to say that the Nineties was when gaming became a big business, and some will lament that. With the decline of the home-computer scene, we lost the open platforms and bedroom-coding scene that produced so many quirky, innovative games and developers. But the arrival of the money men was by no means exclusively negative – as team sizes ballooned and development budgets soared, players were treated to games of previously unimaginable scale and ambition. Just ask anyone who experienced first-hand the realism of *Virtua Fighter*'s animations, the sheer joy of movement in *Super Mario 64* or the cinematic flair of *Final Fantasy VII* – it seemed as though new ground was constantly being broken.

Of course, success inevitably means mainstream attention, and not all of it was positive. But while some sought to create controversy over the violence in *Mortal Kombat* and *Doom*, we also saw our hobby consistently represented on TV. With seemingly unassailable titans like Commodore and Ocean ceasing to be, and new experiences like rhythm action games rising to prominence, the Nineties was a tumultuous time for sure. But anyone who lived through the decade will very likely remember how exciting everything seemed at the time, and will hopefully relive some of those thrills over the following pages.

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MEGA MACHINES!

GAME GEAR

1990

Sega's first handheld console didn't boast loads of exclusive classics, but it was a good way to play popular games on the go. It sold millions of units, but was a distant second to the Game Boy.

AMSTRAD GX4000

1990

Giving the ageing CPC 464 a hardware refresh, Amstrad attempted to take on the console market. It quickly sank without trace, having arrived just as the 16-bit consoles started to dominate.

SUPER NINTENDO

1990

Faced with credible competition, Nintendo created an astonishingly capable console and provided it with countless classic games. This truly legendary machine lasted much of the decade.

NEO GEO AES

1990

SNK's powerhouse console was a dream come true for those who demanded arcade perfection. Though high prices meant it wasn't a mainstream product, the hardcore sustained it for years.

WATARA SUPERVISION

1992

This handheld tried to emulate the success of the Game Boy with its low price and modest hardware, but the software library lacked both the quality and big names of Nintendo's console.

AMIGA 1200

1992

The next generation Amiga was a welcome step up over the original chip set and hosted some fantastic games, but the rise of the IBM compatible PC unfortunately sealed its fate.

FM TOWNS MARTY

1993

This console version of the classic Japanese computer had great hardware, but cost quite a lot and ended up losing the backing of Fujitsu's management before it could really gain traction.

AMIGA CD32

1993

Commodore's last roll of the dice was an attempt to challenge the console market. It was too late to make a difference – after just seven months on sale, its manufacturer went bankrupt.

PLAYDIA

1994

Bandai's console used a CD-ROM and boasted some impressive anime licensed games, almost all of which were edutainment focused with a bit of FMV. As you can imagine, it wasn't great.

32X

1994

This Mega Drive upgrade module was supposed to keep players from buying 3DOs and Jaguars. Instead, it confused consumers who knew the Saturn was coming, and damaged Sega's brand.

SATURN

1994

Sega's real 32-bit machine was great at 2D and had some amazing arcade conversions, but was hard to develop for and handled 3D oddly. Though pretty popular in Japan, it flopped internationally.

PLAYSTATION

1994

Sony's debut hardware redefined console gaming. Though it initially impressed with conversions of hit 3D arcade games, more cinematic original games and a cool image sold it to over 100 million.

PIPPIN

1996

Apple and Bandai teamed up to create this console – another CD-ROM format with some lofty multimedia goals. Much of its library consists of non-game and edutainment software.

NINTENDO 64

1996

A late arrival and the decision to stick with cartridges meant that the N64 would never catch Sony, but raw 3D power and revolutionary game designs ensured it a permanent place in gamers' hearts.

GAME.COM

1997

Tiger Electronics scored versions of some major games for this handheld thanks to its licensing prowess, but weak hardware and a truly dreadful display have ensured that it lives in infamy.

GAME BOY COLOR

1998

For the first time ever, a handheld console offered both colour graphics and reasonable battery life, allowing Nintendo to extend the life of its old tech and continue its handheld dominance.

HARDWARE IS NOTHING WITHOUT GAMES, BUT IN THIS ERA OF UPHEAVAL, ASTONISHING TECHNOLOGICAL LEAPS GAVE DEVELOPERS AND PLAYERS SEEMINGLY INFINITE NEW POSSIBILITIES TO EXPLORE. WE PRESENT A SELECTION OF THE DECADE'S MOST NOTABLE MACHINES

PC ENGINE GT

1990

NEC took the already diminutive PC Engine hardware and created the first true handheld version of a home console. It was amazing to see, but also expensive and very power hungry.

MEGA-CD

1991

This expensive add-on gave the Mega Drive capabilities like sprite scaling and CD sound. Unfortunately, most of its developers were primarily interested in creating interactive movies.

PC ENGINE DUO

1991

With the decline of HuCard software in favour of CD releases, NEC integrated the PC Engine and its CD-ROM add-on together. It was only popular in Japan, but got some amazing games there.

CD-I

1991

Philips positioned this device as a multimedia CD-ROM player, but it received plenty of games. Unfortunately, some awful takes on Nintendo classics are what it's best remembered for.

LASERACTIVE

1993

Pioneer's pricey laserdisc player accepted Mega Drive or PC Engine modules that allowed you to play exclusive Mega-LD and LD-ROM² laserdisc games as well as standard carts and HuCards.

3DO

1993

One of the earliest 3D-capable consoles had some interesting games and an innovative business model, but more capable systems had arrived by the time the price became reasonable.

JAGUAR

1993

Atari offered 3D gaming at a reasonable price, but struggled to source quality software to draw players to the platform. Three years later, Atari limped out of the console market for good.

NEO GEO CD

1994

Freed from the shackles of cartridges, SNK could finally offer affordable Neo Geo games – just as the dawn of the 3D era drew the attention of players away from high-end 2D hardware.

PC-FX

1994

Compared to the competition, NEC's successor to the PC Engine excelled at FMV and little else. This unmitigated disaster sold poorly and ended NEC's time as a console manufacturer.

VIRTUAL BOY

1995

This tabletop console was a rare misfire from Nintendo. Though it could produce a convincing illusion of depth, it suffered from red and black graphics and its users from headaches and nausea.

LOOPY

1995

Casio's unique console was marketed towards girls and featured a built-in sticker printer, around the time of the purikura boom. Only ten games were released, and the system never made much impact.

NOMAD

1995

This fully portable version of the Mega Drive naturally boasted a great library, but had the same problems with bulk and battery life that the Game Gear did, and never left North America.

NEO GEO POCKET

1998

SNK released its monochrome handheld just a week after the Game Boy Color, and quickly realised it was outmatched. Only ten games were released before the console's colour successor arrived.

DREAMCAST

1998

Sega's successor to the Saturn was an affordable and developer-friendly machine. Unfortunately, precarious finances and lack of trust from players meant that it would be the company's last.

WONDERSWAN

1999

Bandai hoped that this cheap and cheerful black and white handheld, designed by the late Gunpei Yokoi, would topple its colour competition. It didn't, but it did find a following in Japan.

NEO GEO POCKET COLOR

1999

Following an abortive Japan-only monochrome model, SNK released this great 16-bit handheld internationally and was developing a niche market before financial troubles cut it short.

FROM BEDROOMS TO FRONT ROOMS!

OVER THE COURSE OF THE NINETIES, THE RISE OF THE CONSOLES MADE VIDEOGAMES INTO A BIGGER PHENOMENON THAN THEY'D EVER BEEN BEFORE, WITH PLAYGROUND RIVALRIES GIVING WAY TO UNPRECEDENTED MAINSTREAM CREDIBILITY

At the beginning of the Nineties, gaming was still very much stuck in the Eighties. In the UK, the most popular gaming systems were still the home computers, with many a youngster still enjoying the delights of the Spectrum and Commodore 64. Elsewhere in the world, Nintendo's NES dominated gaming. All of these systems were technically from the early Eighties, and many players were getting ready to move on, with hardware manufacturers trying to tempt them to leap to their machines.

"I worked on *CVG* in 1989, and during that year things like PC Engine had already come out and Mega Drive was around," says Paul Glancey, a veteran of games journalism who later moved into game production. "The Amiga had got past its slow-ish start, and it was getting more of the big titles than the ST. I think that point, 1990, people were trying to make a choice between Amiga and import consoles." Many players would learn about those consoles via *CVG*'s Mean Machines section, which had grown in popularity since its 1987 introduction. "We were talking to computer game publishers like Ocean and saying 'are you bringing this out on Nintendo or Sega?' They were already interested in what they could do on that hardware, so we knew that consoles were going to be a big thing in the next couple of years, and that's what prompted Julian Rignall to expand Mean Machines into its own magazine," Paul remembers.

Sega introduced the Mega Drive to Europe in 1990, and a year later it was sufficiently popular that EMAP launched the dedicated magazine *MegaTech*, with Paul at the helm as editor. "It was all done with a very small staff in a bit of a rush," he recalls. Nintendo followed with the SNES in 1992, and a console war soon erupted – though as Paul recalls, "Sega had a bit more of a presence in the UK. Virgin Mastertronic were pretty hot on marketing the Sega consoles, and they just kind of had a bit more credibility, they had a bit more of a cool edge than the Super Nintendo at the time." That was a key strategy for Sega, which was hoping to age up the console gaming audience both in the UK and in North America, where it was neck and neck with its rival.

» [Mega Drive] A strong emphasis on sports games helped the Mega Drive to age up the gaming demographic.

The combined force of the rival 16-bit machines pushed UK console gaming revenues past those of computer games that year, as it became clear that players had chosen their way forward. "Amiga was still quite expensive, but if you had a computer it was probably easier and cheaper to get games because it was easier to pirate games, I guess," says Paul. "But it felt like there was a higher quality of software on the consoles – fair enough, an Amiga

IN MEMORIAM

THE FAMILIAR NAMES WE LOST AS CONSOLE GAMING EXPLODED IN POPULARITY

ATARI CORPORATION

Jack Tramiel had inherited plenty of history when he bought Atari's assets from Warner Communications in 1984, and that came to an end in 1996. The company's line of home computers had ceased to be profitable, and its Jaguar console was severely outclassed. With losses mounting, the company withdrew from the scene.

COMMODORE INTERNATIONAL

With PCs taking over the business computing market and consoles taking over gaming, Commodore tried to transition towards console manufacturing in the Nineties, but failed to break through. Its best shot was the Amiga CD32 in 1993, but by then the decline was irreversible, and Commodore filed for bankruptcy in 1994.

OCEAN SOFTWARE

Having gained an incredible reputation during the 8-bit years for licensed games and arcade conversions, Ocean successfully transitioned to consoles, and particularly the Nintendo market. However, the Manchester-based publisher was swallowed in a merger with Infogrames in 1996, and the brand ceased to be used following 1998.

US GOLD

Another big name from the 8-bit era, US Gold successfully transitioned to console publishing, particularly the Sega range in the early years. The company also survived just long enough to push out PlayStation games such as *Olympic Soccer*, before being acquired with distributor CentreSoft by Eidos for £17.6 million in 1996.

MASTERTRONIC

The erstwhile budget game titan was deep into selling Sega products by 1991, with almost all of the company's turnover coming from the console market. To that end, Sega bought the company to function as its European branch, handling marketing and distribution, with the small publishing arm spun off as Virgin Games.

can do all kinds of things and it does pretty good games, but look at the Mega Drive *Ghouls 'N Ghosts*, for example. The dream then was always having an arcade perfect version of the game, and although Amiga tried to do that and did quite well in a lot of examples, the Mega Drive came along and it was like having arcade games – there were no lumpy bits, no loading, and it felt like the real deal in a lot of ways."

Consoles had risen to prominence, and major game launches could bring in millions in days. But this would all be taken to the next level in the next generation. "The Saturn and PlayStation came along and they were expensive, but again there was still that 'I'm going to get arcade perfect versions of these games that I love', like *Sega Rally* or *Ridge Racer*," says Paul. But Sega soon lost its cool, and it was Sony that truly changed things by aiming primarily at adults. "That generation who'd grown up, they'd maybe got a Mega Drive or a SNES when they were 12 or 13, they were getting a bit older and maybe had a bit of money," says Paul. "Also with PlayStation, that whole Nineties rave scene – Sony were able to plug into that, and that gave them a little bit of an edge over Sega. Again, it just became 'these are the coolest machines to have right now.'"

The adult audiance certainly wasn't for everyone – firmly focused on family entertainment, Nintendo sold a respectable number of N64 consoles, though it did fail to surpass the sales of the SNES. However, there was no getting around the success of the PlayStation, which eventually became the first home console ever to sell over 100 million units. The credibility of the Sony brand and pop culture ties like the licensed music of *WipEout* made it something you'd be happy to have in your living room. And then, just as the consoles eclipsed the home computers, they began to supplant the arcades too. "This is only my perception, but you could have an arcade experience without having to leave the house," replies Paul when asked why that happened. "At that point, arcades were starting to feel the pinch. They had to put these sit-down ride machines, or be a big-screen gun game or something like that, so that it would be something where you'd go 'I'll play this because I can't play this at home.'" By the end of the decade, home and arcade hardware had reached near parity with the Dreamcast and NAOMI arcade board.

Consoles had taken over, then – but in the process, there were more gamers out there than ever before, and wider acceptance of them too. ▶

» [SNES] Having great versions of arcade hits helped consoles prevail over the 16-bit computers.

» [PlayStation] Sony made further inroads with adult gamers, thanks to games with mature themes like *Resident Evil*.

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MAINSTREAM MOMENTS

THE KEY EVENTS THAT SHOWED THAT THE WORLD WAS TAKING NOTICE

1992

▶ The launch of *Sonic The Hedgehog 2* receives widespread international television news coverage.

1993

▶ *Time Magazine* features Sonic, Mario and more on its 'Attack Of The Videogames' cover feature.

1995

▶ Sony secures the installation of the PlayStation Room at the Ministry Of Sound nightclub.

1997

▶ Lara Croft appears on the front cover of fashion and pop culture magazine *The Face*.

1999

▶ Sony ships 71.82 million PlayStations by year end, making it the best-selling home console to date.

» [N64] Family games will always have a place in the mainstream, as *Super Mario 64* deftly showed.

» [Saturn] *Tomb Raider* caught the imagination of the wider public, though Sega's console felt little benefit.

SPECTACULAR SUPERSTARS!

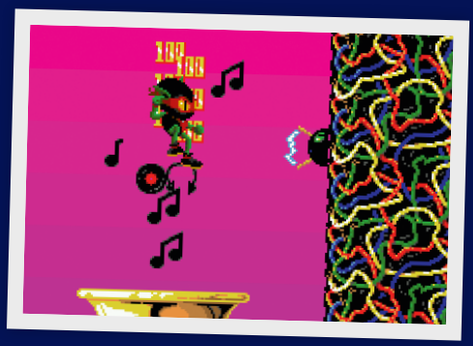
AT ONE TIME IT SEEMED THAT EVERYTHING NEEDED A MASCOT, AND PREFERABLY ONE BASED ON A REASONABLY OBSCURE MAMMAL. BUT AS WELL AS EMBRACING THAT TREND, THE NINETIES REDEFINED WHAT A VIDEOGAME MASCOT COULD BE

Sometimes, one major hit can transform the entire gaming world. It happened with *Space Invaders* in the Seventies, it happened with *Super Mario Bros* in the Eighties, and in the early Nineties, *Sonic The Hedgehog* near single-handedly propelled Sega to international credibility and cool. "When *Sonic* came out on Mega Drive, it gave it such a massive kick – it was quite a young audience, but it was quite an aspirational thing. It just looked cool," says Paul Glancey, formerly of *CVG* and other magazines. "As a character and as a game, it had such a massive impact, and certainly it gave Sega a massive advantage in certain ways. Hedgehog with attitude versus cute plumber – maybe *Mario* was the better game, but Sonic just had a bit more of an edge to him, and that seemed important at the time."

A craze quickly kicked off in the wake of that success, and there were a lot of copycat characters. "Yes, some dreadful ones," Paul adds. Furry creatures with some form of distinguishing trait quickly flooded the market. Bubsy had his fully voiced wisecracks, Rocky Rodent had his punk hairstyle and Gex had an unfortunate addiction to TV. Of course, while animal characters were the safe bet – you could always find weirder examples elsewhere, like Sega's bizarre and frankly unnecessary hardcore pencil, Wild Woody.

Having a killer mascot wasn't a major anxiety on the SNES, where Mario's place at the head of the table was secure, but on the home computers every platform star seemed to be touted as a Sonic-beater. "There was a bit of… 'pollution' seems like a strong word, but a lot of the Amiga titles ended up being converted and they maybe weren't such high quality either. They were decent, they would make good Amiga games, but on Mega Drive they just didn't look quite as good," Paul says.

Of course, mascots weren't just limited to platform games, either. Plenty of famous faces lent their star power to spin-offs as necessary, whether they were battling in puzzle games like *Kirby's Avalanche* or actually punching each other's faces off as in *Sonic The Fighters*. But with that kind of star power, mascots were often roped into dubious junk-food marketing schemes – James Pond would happily hawk Penguin biscuit bars at you, Zool really wanted you to have some Chupa Chups, and Cool Spot was literally a fizzy drink logo on legs. With in-game marketing being very new territory, that was the sort of thing that developers could get away with.



» [Amiga] Zool wasn't actually intended as a challenger to Sonic and Mario, but was received as such by the press.

By the mid-Nineties, reviewers seemed to be a little bit sick of the platform genre and every cuddly critter within it. Burnt out from years of Awesome Possum and Radical Rex, only something truly astonishing like *Donkey Kong Country* could break through the barrier of cynicism. But after the mid-Nineties, our understanding of mascots began to change. A new wave of characters attached to brand-new 3D gameplay revived interest in the genre, and while the likes of *Crash Bandicoot* and *Spyro The Dragon* sold like hotcakes, Sony never felt the need to officially adopt a mascot. Meanwhile, Lara Croft proved that a fairly regular looking human who relied on guns and grit could be the perfect face of a franchise, and maybe even an industry.

And of course, arguably the biggest mascot franchise of the Nineties doesn't have a single face, nor is it primarily a platform series. *Pokémon* is an RPG series, and even amongst the first 251 monsters introduced in the Nineties, there are plenty of series mascots beyond Pikachu that inspire more love and affection amongst their fans than many leading characters ever have. Let's be honest, poor old Croc doesn't really have anything on Snorlax, let alone the likes of Squirtle and Charizard.

These days, we don't see so many new mascots because console manufacturers don't feel they need them. But if the fan appeal of spiritual successors like *Yooka-Laylee* and the nostalgic success of games like *Sonic Mania* and *Crash Bandicoot: N Sane Trilogy* are anything to go by, the survivors of the Nineties will be around for a long time to come. ▶

» [N64] The Pokémon can step into any genre they want – puzzle games would just be another conquest.

BANJO & KAZOOIE

1998

▶ The bird and the bear are huge favourites with the N64 fraternity, with two excellent platformers on that console to their credit. They've been rather quiet since, with their Xbox 360 outing *Nuts & Bolts* dividing fans, but their inclusion in *Super Smash Bros Ultimate* caused many to rejoice.

SONIC

1991

▶ Sega's spiky speedster is arguably *the* mascot of the Nineties, propelling the Mega Drive to incredible success. His absence on the Saturn was missed, and his glorious Dreamcast return in 1998 led to a controversial run of 3D games. Recent Hollywood success proves that he's pretty evergreen.

HALL OF HEROES

THE MOST MEMORABLE MASCOTS OF THE NINETIES, AND WHAT THEY'RE UP TO NOW

LARA CROFT

1996

A controversial choice? Perhaps so. Lara isn't your typical furry forest creature, but the aristocratic archaeologist was as ruthlessly merchandised as any of them, arguably even becoming a mascot for gaming as a whole. She's still very popular today, in games as well as films and much more.

CRASH BANDICOOT

1996

Naughty Dog's brash marsupial instantly found a fan base thanks to his incredibly polished platforming shenanigans on Sony's PlayStation. Several sequels followed and he's now back in the limelight thanks to a remaster of his original three games and a brand-new sequel released in 2020.

EARTHWORM JIM

1994

An ordinary earthworm who happened to stumble on an extraordinary super suit, Jim's absurd adventures were a perfect parody of platform game conventions. He's fallen on hard times since the mid-Nineties, but a comeback on the Intellivision Amico is on the cards in the near future.

KIRBY

1992

The beauty of this little pink puffball is that he can be whatever you want to be, by inhaling enemies and inhaling their powers – so he sucks, but in the best possible manner. He's versatile too, taking in golf, pinball and more, and has been in work constantly since his Game Boy debut.

RAYMAN

1995

Rather than using a real or mythical animal as a basis, Ubisoft's hero is just a dude with a slightly disconcerting lack of limbs. He's starred in some great games despite that, and even survived debuting on the Atari Jaguar, but he hasn't been seen since *Rayman Legends* from 2013.

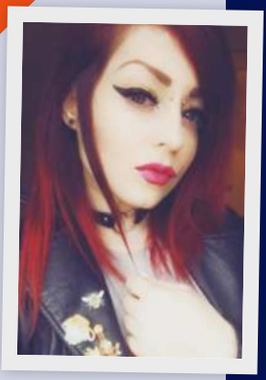
SPYRO

1998

This fiery fellow starred in one of the more open 3D platformers on the PlayStation, and a string of sequels followed. He ended up in the wilderness, a bit part player in the 'toys-to-life' franchise *Skylanders*, but a recent remake of the original trilogy has pushed him back into the limelight.

MASCOT MANIAC

DALEY EVE JOHNSON LOOKS BACK AT THE MASCOTS THAT INSPIRED HER TO BECOME A GAME DESIGNER AT YOOKA-LAYLEE DEVELOPER PLAYTONIC GAMES



Which is the first videogame mascot you can remember becoming a fan of? Did you first encounter them through their games, or something else?
It's gotta be Donkey Kong, the one in *Donkey Kong Country*, the grandson or son (depends which side of the debate you sit on) of the arcade/NES *Donkey Kong*. I knew of Mario too, but kid me deemed a gorilla wearing a red tie much more appealing than a moustachioed-mushroom-munching man. That's not to say I don't love Mario, I do. I've changed since then. I love you, Mario.

Though mascot characters appeared in all kinds of games during the Nineties, they were most commonly platform game stars. Why do you think that was?
A lot of it had to be influenced by Mario, right? The *Super Mario* games were system sellers, and so this idea of platforming game plus cool mascot was proven to have some real value and appeal. It worked for Nintendo, it was going to work for others! There's also something to be said for how important theming is for platforming games. They contain a medley of environmental art, collectibles, lives, baddies and bosses. You had to have an anchor for all of that – and that anchor was the mascot.

Do you think it's fair to say that the move to 3D-capable consoles helped to revitalise waning interest in mascots?
In the cases of games like *Spyro*, *Crash* and *Banjo-Kazooie*, what they all have in common is that they were new IPs *plus* they had brand new bangin' 3D graphics. It was a whole glorious generation of even more polygons and new characters to get to know. As for the mascots who came into 3D from 2D, there was some excitement in seeing the characters realised in a whole extra dimension. My mind was blown when I rolled around in a 3D space as Donkey Kong for the first (and 100th) time.

Some Nineties mascots are still going strong today, but plenty of others didn't last. If you could give any a second chance, which would you choose and why?
Cool Spot – I know this guy was a walking 7-Up ad, but he had style. Who else is going to murder giant crabs with the unbridled force of fancy lemonade? Plok threw limbs before it was cool, I miss him. He said words like 'diddled' and got unreasonably angry about his flag being stolen. If I could swap Rayman out for Plok I would. Gex – Gex is terrible, and that's exactly why I want him back. Bubsy did come back for a bit, but I'm not sure it went very well for him. If you ask me, Bubsy is a cursed mascot, even his creators hated him, but I don't. Let's give him a third chance?

In recent years, mascot platformers have experienced a resurgence in popularity – not just old favourites, but new games like *Yooka-Laylee* too. Why do you think they're proving so popular again?
I'm thinking (hoping) it's a general shift toward feel-good games. I feel like people can really stress themselves out with intense, dramatic, gloomy games, but in recent years I've started to see a change. People are becoming more receptive to chilled out and cutesy games and I reckon this at least plays some part in it!

MAGNIFICENT MAGAZINES!

THE NINETIES SAW A DELUGE OF NEW GAMING MAGAZINES COVERING EVERY FORMAT – AND A BRAND OF ANARCHIC JOURNALISM WE WON'T SEE THE LIKES OF AGAIN

What made Nineties videogame magazines so special? For Paul Monaghan of retro gaming podcast *Maximum Power Up*, it was all about the writers. "Some of the biggest names, like Jaz Rignall, Gary Penn, Steve Jarratt and Gary Whitta, started out in the Eighties, yet by the time the Nineties hit they were like rock stars to some of us," he says. "They were names you knew and could trust."

Paul and co-host Phil Hockaday began *Maximum Power Up* in 2015 with the aim of covering various gaming topics, but the podcast has developed a reputation for its magazine output. So far they've interviewed around 40 big names from retro games magazines. For Paul, it's about recording an oral history of the era. "The games magazines of the Nineties were a very special time and place," he says, "and hopefully the interviews I have done will help explain why."

As consoles rose in popularity, the Nineties saw a boom period for games magazines, and major publishers often had several titles covering the same format. One of the first magazines to capitalise on this console enthusiasm was *Mean Machines* in 1990, and its anarchic style and superstar cast of writers made it an instant hit. It lasted just two years, but it made a massive impact. "Almost 30 years on, the magazine is still highly thought of," says Paul.

Newsagents' shelves groaned under the weight of the vast range of Nineties gaming mags. Some were short-lived: titles like *Maximum*, *Games-X*, *Bad Influence! Magazine* and *Arcade* lasted just a year or two. But some, like *GamesMaster* (1993-2018) and *PC Zone* (1993-2010), lived to a grand old age, and *Amiga Format* survived until 2000, long after the Amiga itself keeled over and died. A few Nineties magazines are still around today, like *PC Gamer* and the revolutionary *Edge* magazine.

Some magazines burned especially bright before their untimely demise. Paul has a soft spot for the multiformat magazine *Zero* thanks to its mix of clever humour and talented writers, including Matt Bielby and Jonathan Davies, who both went on to join the phenomenal *Amiga Power*. *Zero* folded in 1992 after just three years. But Paul's personal favourite from this era is *Super Play* (1992–1996), with its beautiful anime-style covers and focus on Japanese games.

One key facet of Nineties magazines was the increasingly elaborate freebies that graced their front covers. Every other magazine seemed to have tips books, stickers or VHS tapes, and memorably, issue 4 of *Nintendo Magazine System* came with the full CD soundtrack to *Street Fighter II*. Atari ST and Amiga magazines also often had more than one cover disk. "At one point *Amiga Action* had FOUR disks on the cover, and even needed thicker paper to help protect the cover from ripping," says Paul.

But in the end, what made Nineties magazines stand out was the sheer quality of the writing. "The likes of Jaz Rignall, Paul Davies and Richard Leadbetter helped mould magazines like *CVG*, *Official Sega Magazine* and *Mean Machines Sega* into must read titles," says Paul. "The passion was always so easy to see."

RECOMMENDED READING

THE MAGAZINES THAT DEFINED THE NINETIES

MEAN MACHINES

Launch Year: 1990

Former *Zzap!64* editor Julian 'Jaz' Rignall convinced the EMAP bosses to let him create a magazine dedicated to the exciting new consoles emerging from Japan, and *Mean Machines* was born, becoming an instant sell-out hit. It was split into *Mean Machines Sega* and *Nintendo Magazine System* in 1992.

AMIGA POWER

Launch year: 1991

The Mighty Beings of *Amiga Power* dedicated themselves to Disseminating the Truth, and their resulting harsh but fair reviews sometimes led to ongoing feuds with publishers. The magazine was packed with in-jokes and running gags, and later issues were filled with entertainingly bizarre features on topics like Office Joust.

SUPER PLAY

Launch year: 1992

Wil Overton's beautiful covers reflected the growing Western fascination with anime in the Nineties, and *Super Play* made a name for itself through its extensive coverage of JRPGs and imported SNES games. "In a pre-internet but import friendly era, the magazine was like a bible for so many gamers," says Paul.

EDGE

Launch year: 1993

Most Nineties games magazines were aimed at children and teenagers, but *Edge* was focused squarely at adults, with a more serious take on cutting-edge technology. Issue 1 famously came in a mysterious black bag, and the decision to remove author bylines was the antithesis of the rockstar-journalist trend of the time.

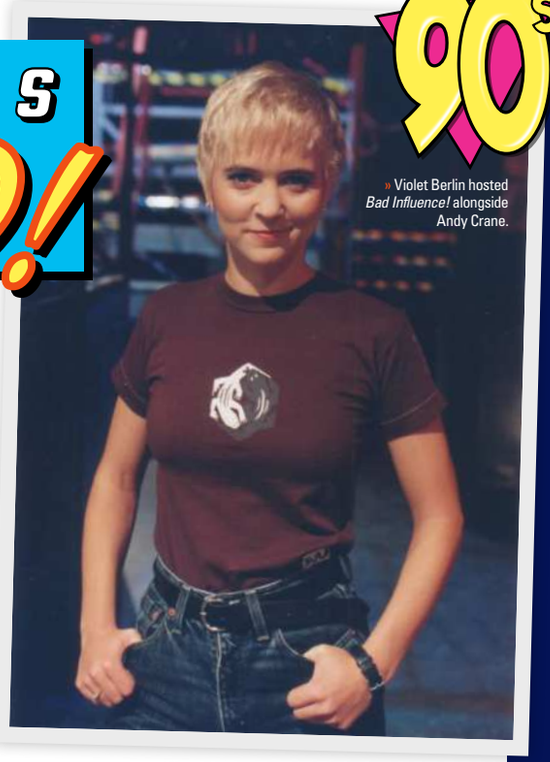
OFFICIAL UK PLAYSTATION MAGAZINE

Launch year: 1995

With a circulation upwards of 380,000 by 1999, *Official UK PlayStation Magazine* was one of the best-selling magazines in the country, helped by its phenomenal cover discs. "*OPM* did such a great job with the official licence the other PlayStation magazines were forced to battle for second place," says Paul.

THE REVOLUTION IS TELEVISED!

THE NINETIES SAW A GOLDEN AGE OF GAMING TV, AS VIDEOGAMES FOUGHT THEIR WAY INTO THE TV SCHEDULES. YET FEW SUCH SHOWS WOULD REMAIN BY THE DECADE'S END



» Violet Berlin hosted *Bad Influence!* alongside Andy Crane.

"Hiya, welcome to *Bad Influence!*, the only place you'll be able to see moving screenshots of the very latest games." This was Andy Crane's opening line on the first episode of ITV's *Bad Influence!*, and it summed up the novelty of seeing videogames on television. After years of making do with static images in magazines, now gamers could see previews of upcoming releases in motion – and it was revelatory. Particularly so with regards to early 3D games like *Star Fox* and *Super Mario 64*, which looked blocky and flat in magazine screenshots, but were breathtaking when seen in full flow on TV.

Violet Berlin wrote and presented the first regular videogame reviews on UK TV in around 1991, as part of the *Cool Cube* youth magazine show on the short-lived satellite service BSB. "It was full of stars," she says of the show. "We had Take That, Zoe Ball was there with me, Michaela Strachan presented. It was quite a big deal, but no one saw it because it was only satellite."

She recalls that the producers were desperate for content to fill six hours of live TV every week, and one suggested that they should do videogames because his nephews were really into them, so some reps from Nintendo came in to do a demonstration. "I got all this kit to take home," she recalls, "and I became completely and instantly hooked from the moment that I started playing *Castlevania* on the NES."

Bad Influence! followed in 1992 with Violet and Andy as presenters, while *GamesMaster* debuted on Channel 4 earlier in the same year, and *Games World* followed on Sky One in 1993. Suddenly, videogames had arrived on TV in a big way. But whereas *Games World* and *GamesMaster* focused on competitions, *Bad Influence!* was much more keen on showing the games and reporting on the latest technology. "The reason the executive got the idea [for the show] off the ground was because *Bad Influence!* was billed as a *Tomorrow's World* for kids," reveals Violet.

However, videogames weren't well understood by the TV establishment back then. "[They were] still treated in a way that you wouldn't treat other media, if you think of how we talk about films or music," says Violet. And videogame TV shows were baffling to game companies, too. Violet notes that it was a struggle to get permission from publishers to show game footage, and their PR departments tended to favour magazines over TV, even though *Bad Influence!* had an audience of five million. "There were exceptions, but generally it didn't feel like we were that high in the pecking order," she says.

Then, as suddenly as it started, the Golden Age of Gaming TV came to an abrupt end, as one show after another was cancelled in the late Nineties. "There was no games TV, and then there was games TV, and then there was no games TV again," says Violet. "And I feel really lucky that I caught that games TV train in the Nineties: it was absolutely brilliant, and really a very, very unique time."

» Following *Bits*, the presenters' careers went in various different paths.

» Star of *GamesMaster*, Dominik Diamond always had lots to say… about pants.

TV HIGHLIGHTS

THE MEMORABLE SHOWS THAT DEFINED THE NINETIES

GAMESMASTER

Years: 1992–1998
Presenters: Dominik Diamond, Dexter Fletcher, Patrick Moore

GamesMaster had competitive events at its heart – partly because it was commissioned by the head of Channel 4's sports programming. Astronomer Patrick Moore dispensed wisdom as the titular GamesMaster, and a parade of rockstar games journalists provided commentary while Dominik Diamond dropped plenty of double entendres.

BAD INFLUENCE!

Years: 1992–1996
Presenters: Violet Berlin, Andy Crane

This 20-minute CITV show focused more on showcasing games and the latest innovations rather than the videogame competitions of its contemporaries. Z Wright provided reports from the US on emerging tech like virtual reality, while Nam Rood (Andy Wear) offered gaming tips to the 'slimy furtlers' at home from his shed.

GAMES WORLD

Years: 1993–1999
Presenters: Bob Mills, Andy Collins

Sky One's *Games World* took the form of an elimination contest, with kids competing to win an arcade machine. The first series featured Diane Youdale (Jet from *Gladiators*) as The Games Mistress, but she was later replaced with a section featuring Big Boy Barry (Alex Verrey) and Lesley Luncheonmeat (David Walliams).

Teletext
Man Diary
COMMUNITY COPPER
After just one day I've stopped being a student. I have instead got a job as a community policeman. It's my responsibility to promote good karma within my local area.
I have already posted feathers and flowers - both a symbol of peace - through letterboxes all across the estate. That isn't to say my methods have worked instantly: last night I had to stop a gang of youths from tipping a cow into the gutter, and I caught an

DIGITISER

Years: 1993–2003
Presenters: Mr Biffo (Paul Rose), Tim Moore (Mr Hairs)

Strictly speaking, *Digitiser* wasn't a TV show (even though it was on the telly), but it was essential daily viewing for more than a million UK gamers. Its winning blend of reviews, news and irreverent nonsense left a lasting impression on a generation of gamers, who still can't look at a bin without thinking of Mr T.

BITS

Years: 1999–2001
Presenters: Emily Booth, Aleks Krotoski, Emily Newton Dunn

Sneaking in right at the end of the decade, just after most other videogame TV shows had been cancelled, *Bits* offered a more adult, anarchic take on videogaming. Its late-night Channel 4 slot meant it could provide racier content than its pre-watershed predecessors, including an episode on sex, drugs and violence.

HANDHELD HEAVEN!

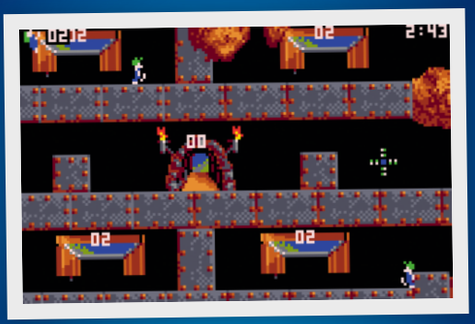
TAKING YOUR FAVOURITE GAMES OUT ON THE ROAD WAS A BIG PART OF PLAYING IN THE NINETIES, AS THE MAJOR MANUFACTURERS TOOK TO MAKING HANDHELD CONSOLES. IT DIDN'T ALWAYS GO WELL FOR THEM, BUT THEIR EFFORTS LEFT AN UNFORGETTABLE LEGACY FOR GAMERS

There are so many times in life when your only option is to sit down and wait. You could be passing time before seeing the doctor, or in the back of a car during a long journey. Whatever the situation, filling these waits suddenly got a lot better as handheld consoles grew in popularity. Of course, handheld videogames weren't an invention of the Nineties, not by a long shot. Whether you want to cite the MB Microvision or the popularity of stand-alone devices like Tiger Electronics' games or Nintendo's Game & Watch series, it's clear that players could enjoy gaming on the go throughout the Eighties. The big difference was that while handheld gaming had been around for a while, handheld consoles as we have come to know them today came of age in the Nineties.

The stage for the handheld boom was set during 1989, when Nintendo introduced its Game Boy. Atari introduced the Lynx later that year, and Sega followed in 1990 with the Game Gear, both of which offered full colour displays. Atari and Sega both tried to offer an experience comparable to that of home consoles, providing full colour backlit LCD displays. Nintendo famously went for a more modest design with a greyscale display, and would ultimately outsell all of its competitors by a wide margin.

All too often, the Game Boy is said to have won out because of its battery life, and while there's some truth to that statement it does a massive disservice to the console's brilliant games. The Game Boy's display was so different to home consoles that it practically demanded bespoke experiences, and Nintendo delivered superbly. If you wanted the full *Zelda* experience, you'd need a Game Boy to pick up *Link's Awakening*. *Mario* fans would naturally want to see the unique stages of *Super Mario Land 2: 6 Golden Coins*, as well as its new villain Wario. *Donkey Kong* was expanded from its original arcade form into an incredible puzzle-platformer. That's before we even get to excellent original titles like *Kirby's Dream Land* and *Mole Mania*, or third party favourites like *Gargoyle's Quest* and *Batman*.

That's not to say that owners of the other systems missed out on great games, mind. While Lynx owners did often have to wait quite a while between games, being able to take excellent versions of *STUN Runner*, *California Games* and *Klax* out with you was rather lovely. Game Gear owners received plenty of conversions from other Sega platforms, particularly the Master System that its hardware was based on, as well as fantastic exclusive entries in the *Sonic The Hedgehog*, *Shinobi*, and *Shining Force* series. But both companies elected not to follow up on their handheld consoles, and by the mid-Nineties Nintendo was the only purveyor of portable gaming.



» [Lynx] Lynx owners couldn't always be guaranteed the big games, though *Lemmings* was an excellent exception.

» [Neo Geo Pocket Color] While SNK's games hardly looked bad, it was the massive battery life that distinguished its hardware.

But what really cemented Nintendo as the master of the handheld console was how it kept the Game Boy relevant for over a decade. It had held off both dedicated handheld designs as well as miniaturised home consoles like the PC Engine GT and Sega Nomad, but by early 1996 the old system was looking a little long in the tooth. The arrival of *Pokémon* – a game designed around the system's portability – revived interest in the venerable system almost single-handedly. Plenty of Game Boys were dusted off, and many more were purchased brand-new to experience the

CALLING CARDS

THE SIGNATURE GAMES THAT WERE EMBLEMATIC OF THE DECADE'S BEST HANDHELDS

STUN RUNNER

Lynx

▶ Frankly, it feels like it shouldn't have been possible to authentically replicate this arcade game on a handheld, but the sprite-scaling capabilities of Atari's powerful system gave a convincing enough sense of 3D to pull it off. Shooting through tunnels at an incredible pace feels even more amazing when it's on a system you can put in your bag.

SHINOBI II: THE SILENT FURY

Game Gear

▶ Joe Musashi's first handheld outing was very good, but the sequel was even better as Sega's ninja master sought to rescue his fellow ninjas from their captors. Each one has different abilities, expanding not only your combat possibilities but the areas you can reach. It looks great and the level design is top notch.

THE LEGEND OF ZELDA: LINK'S AWAKENING

Game Boy

▶ It's easy to forget that Link's handheld debut was the last game to use the original formula before *Ocarina Of Time* redefined players' expectations of the series, but it used it to perfection. Link's journey to Koholint took him out of his comfort zone, but the action-RPG game design puts fans of the series firmly in theirs.

BONK'S REVENGE

PC Engine GT

▶ While the PC Engine GT can play almost every HuCard, some of them work better than others due to the system's screen. Ideally you want to try something with bold colours and chunky sprites, and platform hero Bonk delivers those graphical qualities in all of his adventures – including this second one, which is the best of the lot.

popular monster battling RPG. Kids around the world would join in the fun as translated versions came out later in the decade – and many of them would do it on the Game Boy Color, introduced in 1998 as the first major upgrade to the near decade-old platform.

That's what made handheld consoles so different from the rest of the gaming scene at the time. Companies weren't preoccupied with making more powerful systems, but more efficient ones. The kind of games you could play on a Game Boy Color or Neo Geo Pocket Color weren't tremendously different to those you could have played on a Lynx – but that was the beauty of it. Handheld consoles weren't just a way to keep the kids quiet – as the last bastion of 2D gaming, they were a haven for games as they used to be, and plenty of coding veterans kept themselves busy making portable games. From returning favourites like *R-Type DX* and *Paperboy* to downscaled interpretations of contemporary classics like *Tomb Raider*, the handhelds of the Nineties had a game to offer for just about any fan of old-school design – and that remains true today.

» [Game Gear] Being able to pass a long car journey with *Out Run*'s short car journeys was good fun.

» [Game Boy] Plenty of third party publishers helped the Game Boy to become a success with games like *Batman*.

» [Game Gear] Sonic's star power helped Sega to make a decent attempt at handheld success.

» The Sega Nomad was almost like having a Mega Drive in your hands.

POKÉMON GOLD/SILVER

Game Boy Color

Sneaking out in Japan just before the end of the decade, the second generation of *Pokémon* games is amazing for just how much was squeezed into a single cartridge. Over 250 monsters, an enormous world map and new features make them enormous RPGs – and if you hate colour, they'll even run on an original Game Boy.

METAL SLUG: 2ND MISSION

Neo Geo Pocket Color

SNK's classic run-and-gun formula was hardly broken, but some subtle adjustments for portable play made it a true handheld classic. With brand-new level layouts and the frustration-reducing addition of health restoring items, as well as the ability to track which prisoners you've rescued, the game is a unique experience.

RETRO FUTURISM

ELLIOT COLL MODS AND REPAIRS NINETIES HANDHELDS ON THE RETRO FUTURE YOUTUBE CHANNEL, AND HERE HE EXPLAINS WHY HE'S SO FASCINATED WITH THEM

How did you become interested in retro handheld consoles?

In 2009 I got an issue of the *Official Nintendo Magazine*, and at the back was this double page spread which had retro handheld consoles. My mum used to buy me this every month, and this one made me absolutely obsessed with all the retro consoles. So for my birthday that year, a friend of mine gave me his dad's Game Boy Color. It was pretty much then that I started collecting original Game Boys and stuff.

What do you find appealing about the older handhelds?

I think the beautiful thing about these devices is that the games are so simple, the soundtracks are often really good. I think we now have access to fantastic mods that make the experience less of a gimmick and more of a well-rounded gaming experience that people are fully immersed into and enjoy.

With other options out there, how do you feel about playing these games on original hardware?

You're not really playing these things now to be blown away by the actual experience of the specifications of the original hardware. It's solely now for living through nostalgia, or once you modify an original handheld, getting to actually fully experience the games as they were meant to be experienced, without any limitations. Now, you're not thinking "Oh, today's a crap day to play my PlayStation 5, there's not enough sun," whereas back then there were certain things to take into consideration, like not having backlights.

What would you consider to be some of the essential mods for older systems?

The number one thing is obviously the screen. It's now a solderless process, which it wasn't before, you can now even buy shells on eBay – basically you buy the components and you just fit them together, all you need is a screwdriver. You used to have to cut out the shell and in some cases you used to have to CNC the shell to get a perfectly accurate cut. Within a year it went from being an incredibly difficult thing, and a very expensive thing to do, to now anyone can do it with £100 and come out with a stunning Game Boy at the end of it. So screen is the number one thing. To make it custom, people like changing the shells and the buttons – there's so much variation now that there wasn't before, you can get just about any colour under the sun, and any shade of colour.

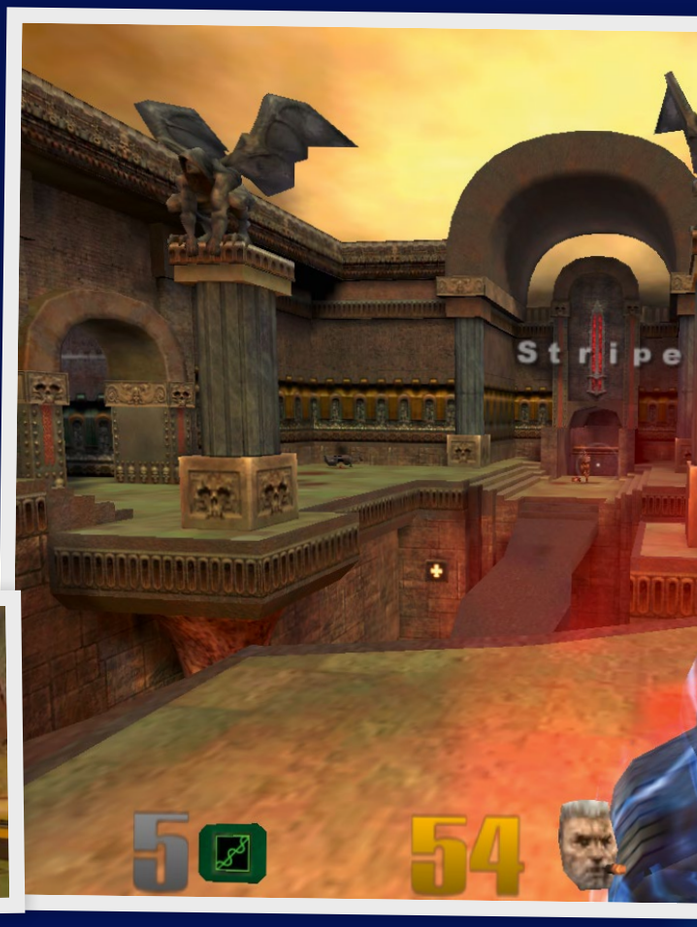
What are some of your favourite games for Nineties handhelds?

For the original Game Boy, *Link's Awakening*. The feeling of completing that game was unbelievable, I literally grabbed my mum and pulled her into the room to see the ending screen. I think there's something so amazing about the ocarina playing the music alongside the other orchestra instruments. I like the original Game Gear *Sonic The Hedgehog*, fantastic game. Neo Geo Pocket, I like *The King Of Fighters*, that's a great game. If I'm honest, *Tetris* is always the game that's loaded into a Game Boy because it's just a pick up and play, zero effort game. *Mole Mania* I've been playing recently, a little hidden gem for the Game Boy, and I've just got a legitimate copy of *Trip World* for the Game Boy as well.

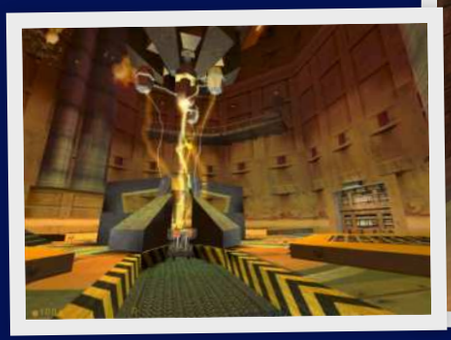
» Here we have a small selection of the many handhelds that Elliot has modded on his channel.

RISE OF THE PC!

INNOVATIVE GAMES, BLEEDING EDGE TECHNOLOGY AND NEW WAYS TO PLAY WITH OR AGAINST OTHER PLAYERS DEFINED WHAT IT MEANT TO BE A PC GAMER IN THE NINETIES, BUT WHAT WAS IT THAT MADE PERSONAL COMPUTERS – AND OF COURSE WINDOWS – THE LEADING PLATFORM?



» [PC] Every PC gamer of the decade remembers their first Resonance Cascade. This screenshot doesn't even need a name: you know it.



Whichever way you look at it, the Nineties was rife with technological advances for the games industry as a whole, and while some might point to the PlayStation, 3D graphics in general or the burgeoning internet as some of the biggest leaps, the PC was at the forefront of this sudden shift in opportunities for gaming. The start of the decade looked completely different by the end, with well-known names like CPC, Spectrum and Amstrad seeing relative success at the turn of the decade only to be cast aside in favour of the behemoth that was Windows and PC gaming. "The PC was definitely not the hardware platform of choice for game makers or players," explains Louis Castle, one of the founders of Westwood Studios and a developer that defined a large part of PC gaming in the Nineties. "As the PC became the dominant platform for home computing, game makers could not ignore the audience size."

This was the key reason that PC gaming began to become so popular early on in the Nineties, because where Atari and Sinclair and the like all focused solely on gaming, Microsoft instead targeted a more well-rounded, functional and capable home computer. As those numbers grew, so too did developer interest in the platform and there were some benefits that came with it. "Windows owes a good deal of gaming platform success to Chris Hecker who created the original WinG libraries, which allowed games to access some of the hardware acceleration that was built into PCs to make Windows be more performant," says Louis. "Direct Draw and the whole DirectX Suite of APIs followed, which allowed PC gaming to happen." With these APIs, a lot of the development heavy lifting could be handled natively on PC that meant developing on PC – and its hodge-podge of potential hardware – didn't require so much effort spent on compatibility.

Admittedly there were other areas that needed work for the PC platform to take off, so when IBM released its video graphics array (VGA) at the turn of the decade, supporting 256 colours rather than the previous 16 colours, the PC could really start being taken seriously. "Until then, PC couldn't really compete on a graphics level," says David Brevik, the man behind one of the decade's biggest releases: *Diablo*. "It just wasn't considered to be much of a platform until that point. But it wasn't long after this, with the advent of the very first 3D cards that came out, and that was right around the time of *Quake*. You had the 3dfx cards that could do 3D, polygonal rendering." This new hardware opened up great potential for the PC platform, but David points instead to the algorithms that could better utilise these new 3D cards as the most important aspect that turned PC gaming into the leading platform for visual fidelity. "Especially things like the BSP tree from John Carmack," adds David, "and being able to draw faked 3D things with *Doom* and true 3D polygons in *Quake* on a high frame rate on a computer … Those kinds of things were the biggest influences on PC gaming in the Nineties."

» [PC] *SimCity 2000* was easily one of the biggest releases of the decade, offering the same sort of sequel improvements as *Civ II* did for *Civilization*.

» [PC] Everyone was talking about *Doom*, and the fact that it was available as shareware meant that interest in PC gaming exploded almost immediately.

» [PC] Blizzard's work on *StarCraft* and building it with multiplayer in mind kept PC gamers hooked, and has built a diehard esports community around it.

And on top of all this was this new-fangled 'internet' thingy coming into prominence, which didn't just enable PCs to send emails and browse the web, but even play games with other players in real-time. *Neverwinter Nights* (1991) was the first online RPG that used graphics, however primitive they may have been, to allow players to connect to others within the game. It was monumental for gaming, and a concept that was used further and further until the seminal release of the first 'true' MMO, *EverQuest*, in 1999. "A wave of consumers now had access to the internet, which transformed the way multiplayer games could operate," says Louis. "Prior to Windows 95, getting any game to work on the internet was a challenge. Our game *Monopoly* used the Windows 95 internet APIs to have a multiplayer launch event in Japan, the US and Europe." It's hard to imagine if the likes of *Quake*, *Diablo*, *StarCraft* and the RTS genre in general would have had the massive appeal they did if it wasn't for the opportunities that the internet presented to PC gamers – and in that sense it was likely the key reason for the Nineties being seen as the Golden Age of PC gaming. "Being able to do multiplayer gaming was a huge factor and the big difference maker for PCs," adds David, "and consoles were way behind on that." *

» [PC] *Doom* may well have created the modern-day FPS, but it was the true 3D of *Quake* that dominated the Nineties.

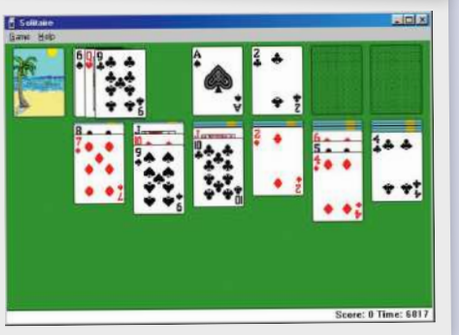
I GOT 95 PROBLEMS, BUT WINDOWS AIN'T ONE

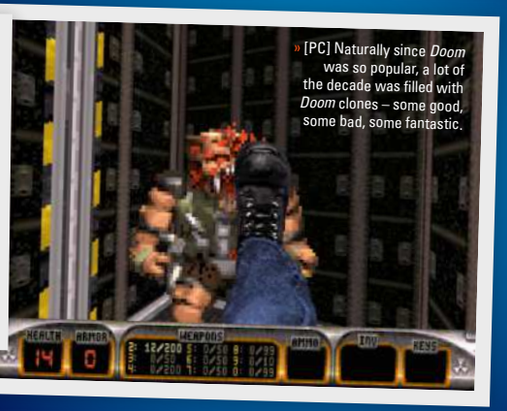
HOW MICROSOFT'S WINDOWS 95 CHANGED THE FACE OF PC GAMING

We don't often talk about operating systems in these pages, less so have we ever described one as 'iconic'. But there's something about Windows 95 that rattles those nostalgia bones: whether it's the familiar logo and startup sounds, that horrible teal desktop background, or just all those hours spent on *Minesweeper*. Win 95 was the starting point for a generation of people just entering the digital age.

But it did a lot for gaming, too. While Microsoft was still pushing on the business nature of its software, there were still some dedicated gamers within the company that saw it necessary to improve the platform for game developers and users. This took the form of DirectX, and while this API wasn't initially anything to dethrone OpenGL (which *Quake* ran on), it would receive continued support from Microsoft throughout the lifespan of Windows 95 to such a point that it is now a fairly essential part of any PC gamer's repertoire of must-download *things* when starting on a new rig.

As a tangent to this was DirectPlay, the communications-based branch DirectX. This naturally was crucial to PC gaming at the time, since it meant no longer was it necessary to lug your machine around to a mate's house for a weekend LAN party, but instead you could connect to other players via the internet. DirectPlay was a key part of easy connectivity, and that's saying nothing of how Win 95 had completely removed the hassle of connecting to the internet in the first place.





» [PC] Naturally since *Doom* was so popular, a lot of the decade was filled with *Doom* clones – some good, some bad, some fantastic.

» [PC] Impressions Games had a very successful run of city-building games all featuring the same core mechanics. *Caesar III* was the most notable, but other games also focused on Greece and Egypt.

PUSHING THE BOUNDARIES

THE BIG-NAME 3D CARDS THAT POWERED THE NINETIES ON PC

3DFX VOODOO GRAPHICS PCI

RELEASED: 1996

There was a time when 3dfx was the one to beat when it came to PC 3D cards, and the name 'Voodoo' is still spoken with reverence. This was the first 3D card that 3dfx released and though it would release additional models throughout the decade, this was a mainstay for many PC gamers. John Carmack once called this card "the benchmark against which everything else is measured". Lofty praise indeed.

NVIDIA RIVA 128

RELEASED: 1997

Nvidia has always been a big player in the PC graphics business, but in the Nineties it was often playing second fiddle to 3dfx. The RIVA 128 was the company's attempt at throwing big numbers at the problem, though there were other downsides that held it back. However, it was the first graphics card to include 3D acceleration on the board, and in the era of *Quake* deathmatches, any assistance in pumping out 3D graphics was a big seller.

3DFX VOODOO2

RELEASED: 1998

Considered to be a great deal better than anything available at the time, the successor to the popular Voodoo had a number of competitors to beat and did so ably. Primarily this was due to the high frame rates it was capable of, a matter that on paper the riva128 should've been able to beat but rarely could. The Voodoo2 was also the first graphics card to introduce SLI, spawning that smug breed of gamer that always has to tell you when they have two GPUs installed in their PC.

NVIDIA GEFORCE 256

RELEASED: 1999

Though it was expensive, this was capable of improving frame rates for games at the time by up to 50%. It began the technical journey towards the practice of having the 3D card take the processing work from the CPU, which is now commonplace. Delays to 3dfx's Voodoo 4 was enough to give the GeForce 256 an advantage in the volatile early days of the GPU market, and the rest became history… 3dfx went bankrupt, and Nvidia bought it up.

CAPCOM
AN ARCADE LEGACY

MANY COMPANIES HAVE MADE THEIR MARK IN THE ARCADE, BUT FEW HAVE BEEN SO INTEGRAL TO GAMING'S OLDEST SCENE AS CAPCOM. JOIN US AS WE DISCUSS A LEGACY OF SUBLIME SHOOTERS, BOISTEROUS BEAT-'EM-UPS AND OF COURSE, VERSUS FIGHTING GAMES

WORDS BY NICK THORPE & MARTYN CARROLL

Here's a mental exercise for you: picture your favourite arcade, any time from the late Eighties onwards. Think about the games in it. How long did it take before a Capcom game crossed your mind? We can't imagine it was long – the company was a dominant force during the heyday of the coin-ops. You could have imagined *1942* neatly tucked into a seaside arcade, *Final Fight* at the swimming pool, *Strider* hiding in the corner of the local pub or even *Capcom Vs SNK* freshly installed in a gigantic projection screen cabinet. Then of course there's *Street Fighter II: The World Warrior*, a game so popular that it can be said to have single-handedly revitalised the Nineties arcade scene. When you think about arcades, it's impossible to ignore Capcom.

Capcom's roots go back to a company called IRM Corporation, a company that was set up to develop and sell electronic gaming machines, founded in 1979 by Kenzo Tsujimoto. As a seasoned Osaka-based entrepreneur, Tsujimoto was experienced in the field as he was also the chairman of Irem Corporation, another amusement machine manufacturer that had just entered the videogames market. However, Irem was acquired in 1980 by electronics manufacturer Nanao, and within a couple of years Tsujimoto was out of favour with the new owners. In 1981, IRM became Sanbi and Japan Capsule Computer was established, providing the two words that would give Capcom its name in 1983. Capcom's early products were mechanical games, *Little League* and *Fever Chance*, but by December of that year it had opened the Acty 24 video arcade and in May of 1984 it released its first videogame, *Vulgus*. This shoot-'em-up would find distribution in North America via another Osaka-based arcade company, SNK.

Before the end of 1984, Capcom would release three more games. *Pirate Ship Higemaru* and *SonSon* were both fun games, but it was the December release of *1942* that really showed the way for the company's early years. Like *Vulgus*, *1942* was a vertically scrolling shoot-'em-up, but this time the theme was World War II. YouTuber and shoot-'em-up enthusiast Gmintyfresh remembers it as the first Capcom game he ever saw. "I was blown away after my first play by the difference between this and the previous shooters I had played like *Space Invaders* and *Galaga*, there was something special about the varied gameplay, fully fledged power-up system, and beautiful bold sprites which drew me in."

Game designer Alex Trowers first encountered the game at a pub in Hambledon, and quickly became a fan. "Nowadays, I can look at it with a more design-centric critical eye and one of the things that stands out is the fact that it's not about muscle memory," he tells us. "There are certain patterns, sure, but they're always modulated by your positioning so it's never the same game twice. Also the limitation of three player shots can be gamed – getting close to a target to increase your fire rate and damage output – increasing the skill ceiling." This depth ensured that the game had plenty of staying power in Japan, and stuck around the top ten in *Game Machine* magazine's ranking of Japan's best performing tabletop arcade games for over nine months in 1985. At the end of that year, the Famicom version of *1942* would launch Capcom into the home gaming ▶

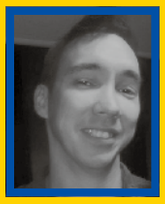
"CAPCOM STAFF FAVOURITES

TAIROKU NOZOE

■ Pirate Ship Higemaru

The gameplay is simple yet deep and endlessly replayable. The nautically themed pixel-art characters, items and icons are so cute and colourful and I love both the gameplay and atmosphere of the game. Please give it a try!"

» [Arcade] *Vulgus* showed early signs of Capcom's key qualities, including attractive art and shoot-'em-up prowess.



ALEX TROWERS
GAME DESIGNER

DANNY BURKE
GAME DEVELOPER

NIC MAKIN
GAME DEVELOPER

BEN JONES
PRODUCT MANAGER, CAPCOM HOME ARCADE

PAUL DAVIES
FORMER CVG EDITOR

GMINTYFRESH
SHOOT-'EM-UP ENTHUSIAST AND YOUTUBER (GMINTYFRESH)

DIMITRIS GIANNAKIS
CPS COLLECTOR AND YOUTUBER (MODERN VINTAGE GAMER)

DOSBOXFALCO
CHAMPION SPEEDRUNNER

CAPCOM STAFF FAVOURITES

TAKASHI ISHIHARA

■ **Street Fighter II Turbo: Hyper Fighting**

To my younger self, this was more than just a game. A person's value was their skill at *Street Fighter II*. Their *Street Fighter II* skill *was* them. Compared to modern fighting games it may seem simplistic, but the skill it demanded of players was the real thing. It was the kind of game that made people as serious about it as I am. Within the *Street Fighter II* series, *Turbo* features high-speed gameplay balanced with reduced attack power, which made for thrilling back-and-forth fights.

CAPCOM STAFF FAVOURITES

TAKASHI MATSUDA

■ **Street Fighter II: The World Warrior**

This game brings back bittersweet memories of youth for me! It became the basis for the versus fighting game genre, and the great thing about it was how differently each of the playable characters looked and controlled. Each required a different strategy and I think that's why people got so intensely involved in their matches. I not only enjoyed playing the game, but watching more skilled players than myself play while I waited for my turn…

FRANCHISE STARTERS

THE GAMES ON WHICH GREATNESS WAS BUILT

1942

YEAR: **1984**

■ Not Capcom's first videogame, but the one that helped establish it as an arcade force. *1942*'s popularity led to a slew of sequels – the majestic *19XX* series – which built on the WWII shooter template. The original may look primitive in comparison but it's still a blast.

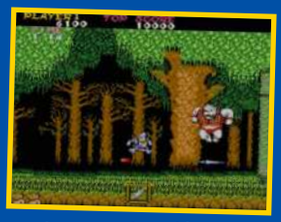
COMMANDO

YEAR: **1985**

■ The game that introduced us to gun-toting, grenade-flinging Super Joe – and the unbridled joy of single-handedly blowing away an entire enemy army. It had two sequels, *Mercs* (1990) and *Wolf Of The Battlefield: Commando 3* (2008), a wild west spin-off, *Gun. Smoke*, and a host of imitators.

GHOSTS 'N GOBLINS

YEAR: **1985**



■ Lance drawn, Sir Arthur descended into the Demon World for the first time – and did die, over and over. It was challenging, but as compelling as hell. A series was born, starting with the sublime *Ghouls 'N Ghosts*, and there were a couple of spin-off series in *Gargoyle's Quest* and *Maximo*.

BIONIC COMMANDO

YEAR: **1987**

■ This run-and-gun platformer was lifted above the competition thanks to its swing mechanic that saw hero Rad Spencer scale the game's dizzying stages. The *Rearmed* updates would appear belatedly, plus a 3D reboot in 2009, but it's the Nineties Game Boy spin-offs that deserve attention.

STREET FIGHTER

YEAR: **1987**

■ Has a game ever been so overshadowed by its successor as *Street Fighter*? Even Capcom ignored the original for years, before finally including it on compilations. Regardless, this is where Ryu hurled his first Hadouken, and Ken, Sagat, Adon, Gen and other combatants made their debuts.

CAPCOM STAFF FAVOURITES

MIKI KITAYAMA

■ **Ghosts 'N Goblins**

I played this for the first time during development of *Capcom Arcade Stadium* – I am not great at action games so I had been avoiding it but when I actually sat down and played it… it was even more difficult than I had imagined! 'Is it even possible to finish this game,' I wondered to myself as I was disheartened by failure after failure… and yet I couldn't stop playing, so I did ultimately come to appreciate the fun of the game. You can plug away at it stoically by yourself, or rope in someone else and have fun coming up with strategies. What a masterpiece!

CAPCOM TIMELINE

NOTABLE GAMES FROM CAPCOM'S GLORY YEARS

1984
VULGUS
SONSON
PIRATE SHIP HIGEMARU
1942

1985
COMMANDO
EXED EXES
GHOSTS 'N GOBLINS
GUN.SMOKE
SECTION Z

1986
TROJAN
LEGENDARY WINGS
THE SPEED RUMBLER
SIDE ARMS

1987
AVENGERS
BIONIC COMMANDO
1943: THE BATTLE OF MIDWAY
BLACK TIGER ■ STREET FIGHTER
TIGER ROAD

1988
F-1 DREAM
1943 KAI
FORGOTTEN WORLDS
LAST DUEL
GHOULS 'N GHOSTS

market, where it would often extend the life of its arcade hits.

Over the next few years, Capcom would make shooting games a core part of its arcade output. The company doubled down on its success with run-and-gun games like *Commando* and *Gun.Smoke*, as well as more traditional shooters like *Exed Exes*, *Section Z*, *Legendary Wings*, *Side Arms*, *Forgotten Worlds* and of course the company's first real sequel, *1943: The Battle Of Midway*. Dimitris Giannakis, CPS collector and owner of the Modern Vintage Gamer YouTube channel, remembers it as his first encounter with the company's work. "I'd played *Galaga* and stuff in the arcades, but this was just a little more advanced – it had a power-up system and it was something that stood in my mind as a really great game. It felt good, and it also had the history behind it with regards to what was going on with World War II."

Capcom was also willing to diversify. The brutally difficult platform game *Ghosts 'N Goblins* proved successful in 1985, and its home conversion sold over a million copies. As well as following up with *Black Tiger* and the quirky *Bionic Commando*, a sequel followed in 1988 – *Ghouls 'N Ghosts*. Former *CVG* editor Paul Davies, who first played the game via its excellent Mega Drive conversion, remains a big fan. "Every little detail, from the skeletons crawling out of the ground, to the fire bats and ultimately Lucifer/Loki was superb. I loved the music too (I can still hear it as I'm writing). This was my first '4:00am' game – I'd stay up past midnight more often than was healthy, learning all the sequences and perfecting the jump attacks."

One remarkable thing was that Capcom built most of its games for standard cabinets, rather than attempting to chase the trend of larger, more gimmicky machines being sold by the likes of Sega. One notable exception was *Street Fighter*, a one-on-one fighting game in which Ryu had to beat up all sorts of menacing chaps from around the world. The game's cabinet infamously included pressure sensitive punch and kick buttons which would launch three different strengths of attack based on how hard they were hit, though alternative versions with six regular buttons were released. This was a popular game for its time, though these days it lives in the shadow of its considerably more popular successor, *Street Fighter II*.

» [Arcade] *Ghosts 'N Goblins* was renowned as much for its extreme difficulty as anything else, but still became a hit.

CAPCOM STAFF FAVOURITES

YASUYUKI TSUJINO

■ Final Fight

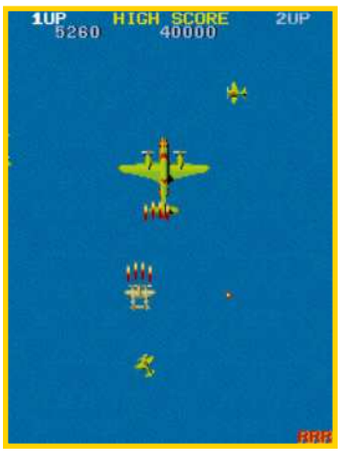
I played the hell out of this in the arcade back when I was in elementary school, so it has a lot of memories for me. Cody is the mayor now though.

Capcom's first five years had been dominated by shoot-'em-ups, and had culminated in the deployment of the Capcom Play System hardware – better known as the CPS today. In 1989, Capcom shifted up a gear, releasing a massive 12 games in a single year. Part of this was due to a partnership with Mitchell Corporation, which supplied its own arcade technology as a low-end alternative to the CPS, and even developed notable games for Capcom such as *Pang*. But the CPS was the real revolution, a powerful 2D board that hosted a variety of hits across genres over the coming years. Some of those were naturally successors to Capcom hits, such as *1941: Counter Attack* and the *Commando* sequel *Mercs*, while others carried on Capcom's success in its core genres – shoot-'em-ups like *UN Squadron* and *Carrier Air Wing*, and platform games like *Willow* and *Nemo*. *Strider* in particular was a triumph, as players were tasked with guiding the incredibly acrobatic ninja Strider Hiryu through some highly varied stages with amazingly impressive set pieces, including a transforming robotic Politburo, an explosive mountainside chase and even anti-gravity action.

While the company had been turning out great games since its inception, by the CPS era it had established a recognisable identity that all of these games benefitted from. "They had a style about them – if you played one Capcom game, you were very familiar with looking at a cabinet and saying 'OK, that's a Capcom game, I know that art style, I want to play this and check it out,'" says Dimitris. Paul agrees that the games were particularly distinctive. "Capcom's hand-drawn artwork was superior to most, especially their humans and monsters, not just space ships and vehicles. I'd want to play them just because of how they looked." Ben Jones, a product manager at Koch Media who headed up the creation of the Capcom Home Arcade plug-and-play system, summarises the sentiment well. "I always sought out Capcom games even from an early age because they had something about them – exquisite playability. Their catalogue was pretty much unbeatable and you knew you could play a Capcom game, whatever the genre, and be entirely satisfied by it and, crucially for Capcom, want to keep playing them."

Other games would prove to be the start of new genre specialisms, such as *Final Fight*. Capcom had dabbled in scrolling beat-'em-ups before with the likes of *Tiger Road*, but the debut of Cody, Guy and Haggar was a true classic. "The artwork is

» [Arcade] *Pirate Ship Higemaru* is a charming maze game, but not one of Capcom's more recognisable releases.



» [Arcade] *1942* was a major hit for Capcom, outlasting plenty of games to take consistent earnings over months.

» [Arcade] *Commando* was another early hit for the company, renowned as much for its home conversions as the arcade original.

1989

STRIDER ■ DYNASTY WARS
DOKABEN ■ WILLOW
LED STORM ■ UN SQUADRON
CAPCOM BASEBALL
PANG ■ FINAL FIGHT
CAPCOM WORLD ■ DOKABEN 2
POKER LADIES

1990

1941: COUNTER ATTACK
MERCS ■ MEGA TWINS
MAGIC SWORD
CARRIER AIR WING
NEMO ■ SUPER PANG

1991

STREET FIGHTER II: THE WORLD WARRIOR
THREE WONDERS ■ THE KING OF DRAGONS
ATAXX ■ BLOCK BLOCK
CAPTAIN COMMANDO
KNIGHTS OF THE ROUND

1992

STREET FIGHTER II: CHAMPION EDITION
VARTH: OPERATION THUNDERSTORM
WARRIORS OF FATE
QUIZ & DRAGONS
STREET FIGHTER II TURBO: HYPER FIGHTING

1993

CADILLACS AND DINOSAURS
ECO FIGHTERS ■ THE PUNISHER
SATURDAY NIGHT SLAM MASTERS
SUPER STREET FIGHTER II: THE NEW CHALLENGERS ■ MUSCLE BOMBER DUO

1994

DUNGEONS & DRAGONS: TOWER OF DOOM
SUPER STREET FIGHTER II TURBO
ALIEN VS PREDATOR ■ PNICKIES
DARKSTALKERS: THE NIGHT WARRIORS
RING OF DESTRUCTION: SLAM MASTERS II
ARMORED WARRIORS
X-MEN: CHILDREN OF THE ATOM

» [Arcade] *Forgotten Worlds* was an interesting shooter with a rotary fire gimmick and gorgeous visuals.

above and beyond any of the competitors of the time, the cleanliness of the sprites, the details in the backgrounds, packed with incidental effects. Nothing came close. This was backed up by carefully crafted characters and excellent music," explains Nic Makin, developer of beat-'em-up *Raging Justice*. "Touches like the special move energy cost, though cynical me thinks it's likely there to get you to pay more, gave a neat risk-reward to the play. Each character having a large move set and distinct play style, from the hulking Haggar to nimble Guy, the game was designed to give the player choice. The enemies were also nicely balanced, each with a recognisable look and unique way of attacking. The game was so well-designed, even down to the attract mode, with that evil laugh, making it easy to find in an arcade."

But of course, the biggest game that the CPS hosted was *Street Fighter II*. While one-on-one fighting games had existed before, Capcom's game codified the genre as we know it today, offering a selection of colourful characters and unrivalled play mechanics. "I used to go probably on a weekly basis for a while to a packed Cascade Amusements in Nottingham's city centre to while away a Saturday afternoon in a smoke-filled environment spending all my pocket money – great times," says Ben. "But further than that, *Street Fighter II* single-handedly created a type of game genre that's still as popular today, with its core mechanics being basically exactly the same 30 years on."

Street Fighter II drove a boom in arcade gaming in general and fighting games specifically, with rival developers launching their own competing games. Cross-town rival SNK was one of the first with *Fatal Fury*, directed by *Street Fighter*'s original director Takashi Nishiyama, and would become arguably Capcom's biggest rival in the genre, while the biggest Western competitor was Midway's *Mortal Kombat*.

Fighting fever even spilled over into the home market. "*Body Blows* was inspired by Street Fighter II and SNK's Fatal Fury," says Danny Burke, graphic artist and concept creator for the well-regarded Amiga fighting game. "I tried to take aspects from both – Dan and Nik having the same moves like Ryu and Ken, and also being brothers like Terry and Andy Bogard." Of course, the game was differentiated from its inspiration. "Only Dan, Nik and Kossack were slightly based on the *Street Fighter II* original roster," says Dan. "There were also different special moves that hadn't been done before, for instance Ninja's invisibility." It was a good job too, as Capcom was fiercely protective of its hit. The US branch even sued Data East for copyright infringement over similarities between *Street Fighter II* and *Fighter's History*, albeit unsuccessfully.

As Capcom hit its tenth anniversary, it also reached a turning point, as this was when it pivoted towards specialising in fighting games. *Street Fighter II* had done wonders for the company, and over the past few years the company released a number of upgraded versions. Super *Street Fighter II Turbo* was to be the last of them, and Capcom began its efforts to move on with the introduction of two new fighting games – the comic licence *X-Men: Children Of The Atom* and the original horror-themed game *Darkstalkers: The Night Warriors*. Both were hits, and Capcom was soon off to the races with follow-ups *Marvel Super Heroes* and *Night Warriors: Darkstalkers Revenge*, as well as the *Street Fighter Alpha* prequel series. "Capcom built a rapport with its audience, putting games out on test and taking feedback seriously. The early fighting game community was respected and honoured with refinements based on suggestions. Magazines celebrated the games *and* the top players. These top players would then inform the next iteration of fighting games, and so it went on," says Paul.

In 1996, Capcom started to look beyond the CPS II. For 3D games like *Star Gladiator*, it adopted the PlayStation-based ZN1 board, but it also developed the CPS III board for 2D games, the first of which was *Red Earth*. This was fantastically powerful hardware, but at a time when 2D was going out of fashion. "In the light of where the industry ended up, it was certainly a bit of a restrictive decision," says Alex. "But again, Capcom's signature look was very much centred around its pixel-pushing power and flat or low-res poly textures just wouldn't work for them." Unfortunately, the hardware's flagship game was the long-awaited *Street Fighter III*. Though the final *Third Strike* revision is known as a classic today for its stunning animation and dramatic tournament battles, in 1997 the initial version was met with scorn for ditching most of the *Street Fighter II* cast and

» [Arcade] *Final Fight* was a beat-'em-up breakthrough, and its quality carried through Capcom's later efforts in the genre.

» [Arcade] *Willow*'s visuals show off the signature style that made Capcom games instantly recognisable in a packed arcade.

"CAPCOM STAFF FAVOURITES

YUSUKE ISHIZUKA

■ 19XX: The War Against Destiny

This game features a great variety of attack options and you need to use them all, from taking out persistent enemies with marker missiles to using variable bombs to get out of tight spots. The level design is also really great and encourages such strategic gameplay. This game is really replayable and is a lot of fun to chase high scores on. I also really like the hard-edged atmosphere of the game's visuals with lots of cool little details. It's got a killer soundtrack filled with memorable percussion hits – my favourite track is the stage 1 theme *A Bit Of Blue Sky Between The Clouds*."

1995

NIGHT WARRIORS: DARKSTALKERS' REVENGE
CYBERBOTS: FULL METAL MADNESS
PANG 3 ■ STREET FIGHTER ALPHA
MARVEL SUPER HEROES
MEGA MAN: THE POWER BATTLE
BATTLE ARENA TOSHINDEN 2
19XX: THE WAR AGAINST DESTINY

1996

STREET FIGHTER ALPHA 2
SUPER PUZZLE FIGHTER II TURBO
DUNGEONS & DRAGONS: SHADOW OVER MYSTARA ■ STAR GLADIATOR
MEGA MAN 2: THE POWER FIGHTERS
STREET FIGHTER ZERO 2 ALPHA
X-MEN VS STREET FIGHTER
RED EARTH ■ STREET FIGHTER EX

1997

STREET FIGHTER III: NEW GENERATION
STREET FIGHTER EX PLUS
BATTLE CIRCUIT ■ VAMPIRE SAVIOR: THE LORD OF VAMPIRE ■ CAPCOM SPORTS CLUB
MARVEL SUPER HEROES VS STREET FIGHTER
VAMPIRE SAVIOR 2 ■ VAMPIRE HUNTER 2
SUPER GEM FIGHTER MINI MIX
STREET FIGHTER III: 2ND IMPACT
RIVAL SCHOOLS: UNITED BY FATE

1998

MARVEL VS CAPCOM: CLASH OF SUPER HEROES ■ PLASMA SWORD
STEEP SLOPE SLIDERS
STREET FIGHTER EX2
STREET FIGHTER ALPHA 3
TETRIS: THE GRAND MASTER
TECH ROMANCER
PUZZ LOOP ■ JOJO'S VENTURE

1999

POWER STONE ■ GIGA WING
STREET FIGHTER III: 3RD STRIKE
STREET FIGHTER EX2 PLUS
FINAL FIGHT REVENGE
JYANGOKUSHI: HAOH NO SAIHAI
SPAWN: IN THE DEMON'S HAND
JOJO'S BIZARRE ADVENTURE
STRIDER 2

2000

GIGAWING 2 ■ DIMAHOO
MARVEL VS CAPCOM 2: NEW AGE OF HEROES
POWER STONE 2 ■ MARS MATRIX
1944: THE LOOP MASTER
CANNON SPIKE ■ CAPCOM VS SNK
MIGHTY! PANG ■ PROJECT JUSTICE

CAPCOM STAFF FAVOURITES

MICHITERU OKABE

Final Fight

Every time I see this game I'm reminded of playing it with friends in the arcade game area of a bowling alley I used to frequent as a kid. I don't remember ever getting to the end, but I pumped a lot of coins into this one.

2001

PROGEAR ■ PUZZ LOOP 2
GUN SURVIVOR 2: BIOHAZARD
CAPCOM VS SNK 2
STREET FIGHTER ZERO 3 UPPER
MOBILE SUIT GUNDAM

2002

GUN SURVIVOR 3: DINO CRISIS

2003

PRIDE GP 2003
MOBILE SUIT Z GUNDAM
HYPER STREET FIGHTER II: THE ANNIVERSARY EDITION

THE HARDWARE RACE

THE COMPETING SYSTEMS THAT SET THE ARCADES ALIGHT

CAPCOM CPS-1

LAUNCHED: **1988**

■ This was Capcom's 68000-based workhorse, running more than 30 arcade games including such hits as *Forgotten Worlds*, *Final Fight* (pictured), *Strider* and the colossal *Street Fighter II* series. To reduce costs, games came on daughter-boards that were attached to the main system board.

NAMCO SYSTEM 2

LAUNCHED: **1987**

■ Utilising twin 68000s and various video chips, this powerhouse system ensured that Namco was a frontrunner in the hardware stakes. Highlights on this system included *Final Lap*, *Rolling Thunder 2* and *Lucky & Wild* (pictured). Subsequent 'System' hardware would be polygon-based.

TAITO B SYSTEM

LAUNCHED: **1989**

■ While Taito's similar Z System was designed with racing games in mind, its B System provided a solid platform for a variety of arcade styles. Some of the memorable hits that ran on this capable 68000 system were the *Rastan* sequel *Nastar* (pictured), *Violence Fight* and *Puzzle Bobble*.

SNK NEO GEO MVS

LAUNCHED: **1990**

■ Easily rivalling the CPS-1 technically, thanks to its custom video chipset, this 68000-powered cartridge-based system was home to around 150 games including *Fatal Fury* (pictured), *Samurai Shodown*, *Metal Slug* and many other cult classics. A desirable home version (AES) was also available.

SEGA SYSTEM 32

LAUNCHED: **1991**

■ Sega's first 32-bit system employed a NEC V60 CPU to deliver the final revision of its 'Super Scaler' hardware. Racing game *Rad Mobile* was followed by many stunning titles including *OutRunners*, *Spider-Man: The Video Game* and *Jurassic Park* (pictured). It's hard to believe this tech was devised in 1990.

PACKING A PUNCH

FIVE REASONS WHY CAPCOM IS THE KING OF BRAWLERS

THE PUNISHER

YEAR: **1993**

Dropping comic-book characters into a beat-'em-up was hardly a groundbreaking idea, but this winning combination plays like *Final Fight* on illegal stimulants. Taking control of Frank Castle (with Nick Fury joining in co-op mode), you pop many heads on the way to defeating the evil Kingpin.

ALIEN VS PREDATOR

YEAR: **1994**

Probably the best property to carry the *Alien Vs Predator* name – and certainly the only one where a verbose Predator regains health by munching pizza. This was one of the first games to use Capcom's enhanced CPS-2 hardware to deliver more sprites, more action, more all-round mayhem.

ARMORED WARRIORS

YEAR: **1994**

Another three-player brawler, only this one swaps out flesh-and-blood characters for warring mechs on a mission to defeat an invading force. The mechs are huge and can be upgraded, customised and combined, and the result is unprecedented levels of on-screen carnage.

D&D: SHADOW OVER MYSTARA

YEAR: **1996**

This intriguing four-player release successfully marries *Golden Axe* gameplay with the kind of customisation and XP gathering you'd find in a lite RPG. This improved on the earlier *Tower Of Doom* and both games were collected together on the 2013 release *Chronicles Of Mystara*.

BATTLE CIRCUIT

YEAR: **1997**

Having pushed the genre to its extremes, Capcom was in danger of overloading players' senses with this over-the-top, four-player slugfest that's brilliant and bonkers in equal measure. Both this game and *Armored Warriors* were included in the recent *Capcom Beat 'Em Up Bundle*.

CAPCOM STAFF FAVOURITES

THOMAS VERAART

■ Mega Twins

I love this side-scrolling action game because it strikes a great balance between being accessible and being brutally hard. The game has a cute art style typical for the era, but don't let your guard down too much because it could cost you! Even if you get a game over, the comical death animations make you want to put in another coin and come back for more.

▶ introducing unpopular gameplay changes. The game unfortunately bombed, struggling to gain an audience that was well served with both 3D fighters like *Tekken 3* and more popular 2D fighters including, ironically, the *Street Fighter Alpha* games.

But as the decade wore on, Capcom kept introducing more fighting games such as *JoJo's Bizarre Adventure*, *Rival Schools* and the Arika-developed *Street Fighter EX*, while continuing to develop *Street Fighter III*, *Street Fighter Alpha*, *Darkstalkers* and the *Marvel* games that had by this point become crossovers with the *Street Fighter* series. Did this glut of fighting games mean that the company essentially ended up competing with itself? "Not at all, they were for the most part successful games that players wanted to play," says Danny. "I guess they just followed their market audience." However, not everyone feels this way. "As someone who loves fighting games I couldn't get enough Capcom, *Darkstalkers* and *Street Fighter* and later the *X-Men* and *Marvel* titles, they all had a huge draw for me, but I only had so much money and time to spend so I'd gravitate to the same few games and characters again and again," says Nic. "Fighting games do take a certain amount of investment to get to a skill level that you can enjoy playing at, so with the large range available it's inevitable that players would limit what games they played."

Of course, fighting games weren't the only sorts of games that Capcom was making at this time, though they did ultimately account for half of the company's output from 1994 to 1998. The company continued to develop excellent scrolling beat-'em-ups like *Alien Vs Predator*, *Dungeons & Dragons: Shadow Over Mystara* and *Battle Circuit*. While shoot-'em-up production had dwindled, with only *19XX: The War Against Destiny* to note in this period, the company did try some other things, such as arcade adaptations of the *Mega Man* series that was popular on home consoles. Quiz and puzzle games were also released, the most notable being *Super Puzzle Fighter II Turbo*. "It would have been easy for Capcom to create a *Columns* clone and slap *Street Fighter II* characters cosmetically into the design and watch the sales roll in," says Gmintyfresh. "But typically for a Capcom game, more attention and depth was added during development so that character choice made a difference to how the game played, creating a puzzle/fighting fusion which was truly unique."

Late in the Nineties, the arcade market was beginning to decline and the peak years of the fighting game boom had long passed. So, Capcom began to refocus its efforts, reducing its arcade releases and focusing less on fighting games. The result of this was that some of Capcom's old hits were reimagined for the modern day. *Strider 2* brought back the ninja for some more platforming action in 1999, and 2000 saw revivals with the releases of *Mighty! Pang* and *1944: The Loop Master*.

» [Arcade] *Captain Commando* was another entry in Capcom's line of outstanding scrolling beat-'em-ups.

One benefit of having capable 2D hardware that was old enough to be relatively cheap is that Capcom could entice external developers to work on the CPS II. This allowed the company a major role in the shoot-'em-up genre that the company had built its success on. "Capcom was key in keeping the genre alive by fostering a safe place for external developers such as Cave, Psikyo and Takumi to operate. This is evidenced by the numerous games that Capcom published from external developers during this period," says Gmintyfresh. "In a climate where the shoot-'em-ups where seen as a dead genre and times were tough for these specialist developers, titles such as *Mars Matrix*, *Progear* and *Giga Wing* were a vital showcase of talent and income for companies sometimes operating on a knife-edge."

However, Capcom was looking for something more powerful and Sega's Naomi board was adopted, as it made games easy to port to the home market where Capcom was doing well. More 3D games were developed, such as the brilliant brawler *Power Stone*, licensed combat games like *Spawn: In The Demon's Hand*, *Heavy Metal Geomatrix* and the popular *Gundam* series. This was also where Capcom's later efforts in the fighting genre landed, and though they may not have been as commercially successful as past games, they're regarded as classics of the genre. In 2000, *Marvel Vs Capcom 2* offered a gigantic character roster packed with familiar faces and deep cuts, as well as frantic tag team action that has generated memorable tournament moments. The same year, a crossover with rival fighting game developer SNK resulted in *Capcom Vs SNK*, an intriguing game that was swiftly made redundant by its 2001 sequel, which also boasts a huge variety of characters and became a competitive favourite for years.

Unfortunately, it wasn't long before Capcom further reduced its involvement in arcade game development, as the sector continued to decline. "I think from 2000 onwards the arcades were always going to decline. Home gaming machines were becoming capable of true ▶

» [Arcade] Capcom's production of shoot-'em-ups like *Varth* started to dwindle as the fighting game boom took hold.

CAPCOM STAFF FAVOURITES

TAKEYUKI YAMAMOTO

■ Progear

At first it was too difficult for me and I could never finish it, but I gradually improved and learned new tricks. That kind of replayability meant the game was fun and rewarding. The jewel system has depth and to survive and rack up a good score, you really need to track not only the enemy bullet paths, as is standard in this kind of bullet-hell game, but the enemy ships themselves and the timing with which you take them out.

» [Arcade] *Strider*'s dynamic platforming and memorable moments ensured that it was a hit, especially with our editor.

arcade-perfect gameplay, styles of games were changing too," says Nic. "I don't think even Capcom could have saved the arcades, they became more [like] fairground attractions than videogames, not something that fit with the kind of gaming Capcom was master of." Indeed, Capcom was still not in the habit of producing games for oversized showcase cabinets, and tentative steps like *Gun Survivor 3: Dino Crisis* didn't pan out. The cancellation of the crossover 3D fighter *Capcom Fighting All Stars* in 2003 was symbolic – Capcom's focus had firmly moved to the home market.

With that having been said, Capcom didn't actually exit the arcade market completely. The production of *Gundam* games continued and the company moved towards the production of games for family entertainment centres, medal games and the like instead of traditional videogames. The company even managed to revive mainstream interest in arcades for a short while when *Street Fighter IV* launched as a coin-op first, though the console versions ultimately became the standard way to play. Capcom is still involved in arcade development, continuing to produce games like *Luigi's Mansion Arcade* and *Monster Hunter Medal*, though most of its money in the arcade sector is made through the Plaza Capcom arcades it directly operates in Japan.

But while the nature of Capcom's involvement in the arcades has changed, its legacy cannot be diminished. "Each of the major studios had their own vibe; Capcom titles had a certain drama to them in which the heroes and NPCs had terrific personality. Spotting these details and quirks gave Capcom coin-ops more replay value than most, which made the games worth owning in hugely-anticipated home conversions," says Paul. "The fact that one of their IPs is still being made today, 30-odd years later speaks volumes. Their method of sequencing inputs to create a move is now just the way it's done. I also know of several artists who wouldn't have had a career in the games industry without Capcom artwork as their inspiration," adds Alex. "Capcom was definitely one of the top companies in the arcade gaming market," says Danny. "You have to realise that people still play the arcade classics today and Capcom still makes money on *Street Fighter II* and other games on new console hardware. That's why retro is a thing!"

It's not just nostalgic gamers that are enjoying those classics, as Capcom's arcade games still hold appeal for new players. "I don't believe I've ever even seen a legit Capcom board in the wild before, which is somewhat sad," admits dosboxfalco, a speedrunner whose young age meant that he missed the glory years of the arcade scene. Instead, he experienced the classics at home. "I got great grades when I was about nine or ten, and got taken to Gamestop to get a game, and I picked *Capcom Classics Collection Remixed* for the PSP because it was cheap." *Final Fight*, *Magic Sword* and *1941* were favourites then, but *Ghouls 'N Ghosts* and *Strider* are the games he's best known for today. "When I was good enough at both, and had a decent amount of experience, I looked up the world record speedrun. For *Ghouls*, it was a 15:23 by my good dude Aquas. *Strider*, an 8:15 tool-assisted longplay erroneously published on speedrun.com. For both, I went 'Yeah, I can do better than that' and went on long grinds." Today, he holds the records for both, beating *Ghouls 'N Ghosts* in 15:06 and *Strider* in under eight minutes. "I think Capcom is *the* arcade developer. They were incredibly prolific, created many, many classics and popularised genres in and outside of the arcade gaming sphere," he says.

Those that got to experience those games in their natural habitat share that sentiment. "That Capcom name behind the arcades was something that you just didn't question, it was the best that there was at the time," says Dimitris. For Gmintyfresh, the depth of the company's contribution to the scene stands out. "Their arcade games are still infinitely playable and uniquely identifiable. Whilst there is no denying games like *Strider*, *Forgotten Worlds*, and *Ghouls 'N Ghosts* are true arcade classics, lesser-known games like *Varth*, *3 Wonders* and *Cyberbots* should also be sampled for similar levels of playability and fun."

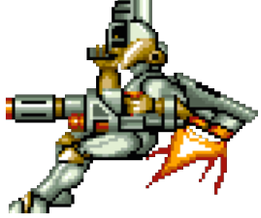
"Capcom *is* arcade gaming for me," says Nic. "Their titles defined my childhood obsessions, their artwork was head and shoulders above the competition, their gameplay perfected for the coin-op. From an industry point of view, I think they pushed arcade gameplay forwards more times than anyone else during the golden era. Without Capcom I believe the arcades of the Nineties would have become little more than a novelty alongside penny pushers and grabber machines." Ben, who continues to work on updates to the Capcom Home Arcade, feels similarly. "They were the finest arcade-game developer and manufacturer of all time. This, in my opinion, is due to the consistency of bringing exceptionally high-quality product to market. During those days they didn't put a foot wrong."

Fortunately, there are plenty of ways to bring the arcade experience home today, from the classic compilations that dosboxfalco grew up with to the Capcom Home Arcade, and now *Capcom Arcade Stadium*. Whatever your decision, you can't go wrong – no matter where you experience them, Capcom's arcade games are games that defined an era. ✱

"Capcom Staff Favourites – Hidekatsu Tetsuda

19XX: The War Against Destiny

The difficulty level is just right – you can just about get by on your reflexes but there's also a lot of depth. If you want to get a high score you need the skill and precision to pull off charged shots and well-timed bombs in order to weaken but not destroy enemies and medals, then take them all out in one go. I think the visuals and effects are really cool and among the best in Capcom's arcade games."



"Capcom Staff Favourites – Hidenori Takaya

Ghouls 'N Ghosts

The unforgiving gameplay where one mistake could cost your life was well-balanced with the fun sense of reward you felt from becoming more skilled at the game through repeated attempts. The variety of weapons available meant that you could retry tough stages with a different one and maybe finish them that way, which gave the game a lot of depth."

» [Arcade] *Street Fighter II* was a revolutionary game, and arguably added years to the lifespan of arcades as a whole.

» [Arcade] *Darkstalkers* was a successful new implementation of the fighting game formula and received its own sequels.

» [Arcade] A collaboration with long-time rival SNK managed to draw some interest in the declining fighting game scene.

» [Arcade] The CPS II had a long life thanks to games like *Mars Matrix* that just needed to shift a lot of sprites.

CAPCOM ARCADE STADIUM

BRINGING THE ARCADE EXPERIENCE HOME TO CONSOLES

If you find yourself hankering to play some of the games covered in this feature and happen to be in possession of a console or PC, Capcom has got you covered with its new *Capcom Arcade Stadium* compilation, which is available now. Unlike most compilations, *Capcom Arcade Stadium* takes a modular approach. The main package is free to download and allows you to try out the software with *1943: The Battle Of Midway*. Beyond that, *Ghosts 'N Goblins* can be purchased as an individual title, and the remaining games are available in bundles of ten, or a single bundle of thirty.

The *Dawn Of The Arcade* pack covers games from 1984 to 1988 and will delight shmup fans, as it includes *Vulgus*, *1942*, *Section Z*, *Legendary Wings* and *Forgotten Worlds*, as well as *Pirate Ship Higemaru*, *Commando*, *Trojan*, *Bionic Commando* and *Ghouls 'N Ghosts*. The CPS-focused *Arcade Revolution* pack runs from 1989 to 1992 and contains *Strider*, *Dynasty Wars*, *Final Fight*, *1941: Counter Attack*, *Mercs*, *Mega Twins*, *Carrier Air Wing*, *Street Fighter II: The World Warrior*, *Captain Commando* and *Varth: Operation Thunderstorm*. Finally, the *Arcade Evolution* pack runs from 1992 to 2001 and includes *Warriors Of Fate*, *Street Fighter II Turbo*, *Super Street Fighter II Turbo*, *Armored Warriors*, *Cyberbots: Full Metal Madness*, *19XX: The War Against Destiny*, *Battle Circuit*, *Giga Wing*, *1944: The Loop Master* and *Progear*.

Capcom Arcade Stadium includes a number of features that are particularly desirable in any retro collection. Save states are present and correct, with saving and loading possible at any time, and a rewind feature is available for the correction of any careless gameplay mistakes. Of course, if you'd rather not abuse save states and rewinding, you may wish to take advantage of the adjustable difficulty levels. It's also possible to adjust the speed of gameplay on the fly, which is a feature that we don't often see. A variety of display options are also available. As well as the standard option for scanlines, it's possible to simulate CRT curvature, and these options are available independently of one another. Additionally, you can play the game on a number of 3D-rendered versions of arcade machines, including Capcom's own cabinets such as the Impress and the Mini Cute. It's also possible to rotate the display, which is useful for portrait-oriented games like *1942*.

If you fancy some competition or a helping hand in the harder co-op games, local multiplayer is available. Leaderboards are also available online, and Capcom is promising to add some new spice to old favourites with its weekly special challenges, in which you can try to achieve high scores while playing a game upside down or at high-speed.

We've been really impressed playing *Capcom Arcade Stadium* and the only real issue we've had so far is that Capcom hasn't released any new games for it. Hopefully that will change in the future, as there's still plenty of classics we'd love to experience.

ULTIMATE GUIDE

MANIC

It's the legendary platform game that instigated a whole genre and introduced the world to wonders such as Eugene's Lair and The Central Cavern. Revered by a whole generation of Spectrum gamers, this is the ultimate guide to the pixel-perfect legend that is Manic Miner

Words by Graeme Mason

AMOEBATRON

BARREL

First published in 1983, Matthew Smith's *Manic Miner* was a smash-hit sensation. Devised within eight weeks by this precocious teenager in his bedroom, the talented coder would soon also assume a mythical status among Spectrum owners. The legend of both Matthew Smith and Miner Willy begins here.

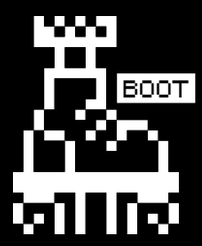
And it starts with a story as odd as some of its graphics. While prospecting for treasure in the wilds of Surbiton, Willy discovers an ancient mineshaft. Unable to resist the urge to explore, the valiant miner is soon delving deep into these strange caves, inhabited by the automatons left over from a superior civilisation, lost in time. With their masters destroyed by war, these robots continue to mine valuable minerals. Struck by the beautiful glowing treasures that lay in each cavern, Willy realises that this is his opportunity for fame and fortune, should he be able to dodge the deadly occupants of this ancient underground realm. These hazards take on the form of poisonous flowers, spiders, slime and, naturally, the aforementioned robots, busy gathering precious metals and deadly to the touch. If Willy is to claim his prize and escape these mines, he must evade them all. Fortunately, this miner has an athletic jump and a considerable air supply for each cave.

Each screen has a number of flashing keys strewn around. Some are picked up easily, while others perch awkwardly, guarded by the peculiar robots – or as the cassette inlay boldly explains "MANIC MINING ROBOTS". Once Willy has collected all the keys to a particular level, the exit door pulsates, and he can make his escape to the next room. The keys vary according to the idiosyncrasies of the screen that Willy finds himself in: snowshoes feature in the Cold Room, while ten pence pieces and peeled bananas are the collectibles in the Mutant Telephones and Kong levels respectively. Each item nets Willy 100 points, while completing a level gives him a bonus, calculated by how much air he has remaining. For every 10,000 points, there's a very welcome extra life.

> "It was like a dream come true to work on Manic Miner"
> AMSTRAD CODER STEVE WETHERILL

FLAG

BUG



BOOT

THE MINER FILES

■ The title screen music is *The Waltz Of The Blue Danube* by Johan Strauss.

THE MINER FILES

■ The final exit icon is the Greek letter Omega, signifying the end of the game.

THE LEGACY OF MINER WILLY

HE INSPIRED A WHOLE NEW GENRE OF SPECTRUM GAMES – BUT HOW?

THE TITLE SCREEN

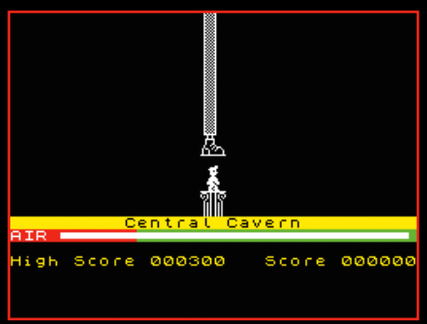
The words 'MANIC' and 'MINER' flash alternately upon loading in big and bold letters. With many early Spectrum games even lacking a loading screen, this was an energetic thrill, and other developers were soon imitating the design.

LEVEL PREVIEWS

While listening to the jovial music of *Manic Miner*'s start screen, the game suddenly flicks to previews of what lies ahead for this underground explorer. Essentially an attract sequence, many other games were soon imitating this trick from the arcades.

LOTS OF SCREENS

In 1983, the vast majority of Spectrum games were one-screen, and often arcade clones. *Miner 2049er*, *Manic Miner*'s forebear, housed a dozen screens, while Matthew Smith's debut had a mind-boggling 20 screens to discover.



GETTING THE BOOT

They are the words that are familiar to any gamer of any generation: game over. And in *Manic Miner*, they were famously accompanied by a large boot, descending at pace onto poor Miner Willy's head. Game over screens would never be the same again.

IN GAME TUNE

Music itself was a rarity on the ZX Spectrum in 1983; an actual tune, playing throughout a game *and* with sound effects was something that many even thought impossible. Matthew Smith proved them wrong.

COLOURFUL AND STRANGE SPRITES

For *Manic Miner*, praise was common for its variety of crazy graphics. With its sliding penguins, clockwork robots and circus seals, this was the acclaimed game with imagination that inspired graphic artists everywhere.

KANGAROO

"Full of humour, horror and wholesome addiction"
C&VG REVIEW OF MANIC MINER

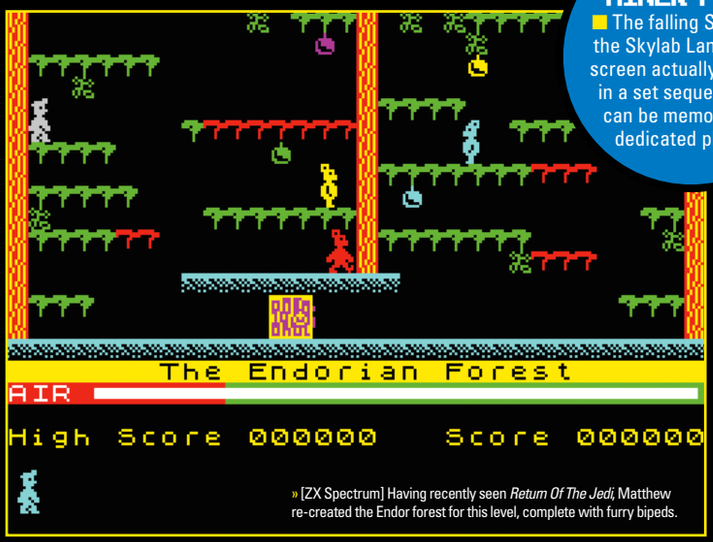
» [ZX Spectrum] Where it all starts: the Central Cavern.

» [ZX Spectrum] Eugene's Lair, a mash-up of the success of fellow coder, Eugene Evans, and the snapping toilet monster story that Matthew used to tell to his brother.

THE MINER FILES

The falling Skylabs of the Skylab Landing Bay screen actually descend in a set sequence, and can be memorised by dedicated players.

BEAR



» [ZX Spectrum] Having recently seen *Return Of The Jedi*, Matthew re-created the Endor forest for this level, complete with furry bipeds.

» [ZX Spectrum] Where it all ends: The Final Barrier.

KEY

CONVERSION CAPERS

ZX SPECTRUM

The original Matthew Smith classic. First released by Bug-Byte, then Software Projects, it's the iconic legend that helped to define the ZX Spectrum. It's a testament to the game's enduring appeal that when *Manic Miner* was finally reviewed in *Crash* magazine in 1989, it received a Crash Smash – not too bad for a six-year-old game.

COMMODORE 64

Converted by Software Projects' Chris Lancaster, the Commodore 64 port, while not quite having the legendary cachet of its Spectrum forebear, remains an excellent game, only let down by some slightly iffy collision detection. Oh, and the music, which while just about acceptable for Spectrum owners, is not quite what Commodore owners were used to.

COMMODORE 16

Squeezing the 20 levels of *Manic Miner* into 16k is an admirable effort, and to be fair, much of the game's playability is retained. As you'd expect, many of the famous frills are gone, as are some of the enemies and the music, which could be a good or bad thing, depending on your liking of the incessant loop of the Grieg piece.

AMIGA

There are two versions for Amiga owners: the original game, recreated faithfully, and an updated game, featuring improved graphics, sound and a new tune. While the latter game is undeniably an improvement aesthetically, in our opinion, something of the classic look of *Manic Miner* is lost with its zoomed in view, and it just doesn't have the verve of the original.

AMSTRAD CPC

Created by Steve Wetherill and Derrick Rowson, this Amstrad port was released by both Software Projects and Amsoft in 1984 and 1985 respectively. Improved sound aside, it's a near-identical port except for the final screen, possibly altered for memory-saving considerations. Probably the most faithful of the 8-bit conversions.

BBC MICRO

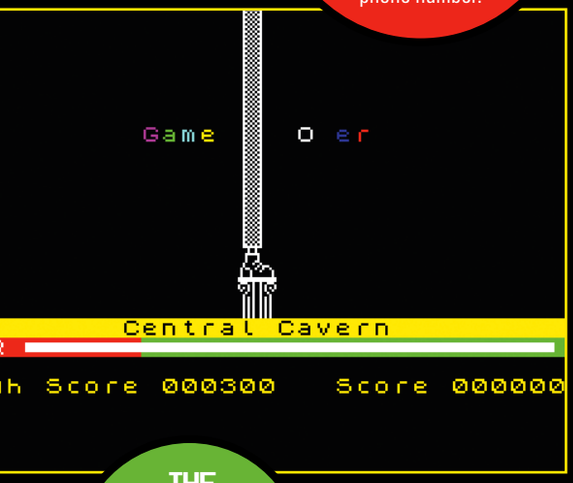
With its altered colour scheme and an air meter on the left rather than below the game screen, the BBC Micro version is certainly visually diverse. It is substantially slower than the other versions, too, which for a game requiring fine timing such as *Manic Miner* is frustrating. This is one of the poorer 8-bit ports available to play.

CLOCKWORK ROBOT

THE MINER FILES

■ The Bug-Byte version has a cheat mode that is activated by typing in an approximation of Matthew Smith's driving licence number. It's sometimes mistaken as his old phone number.

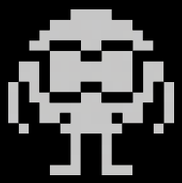
KONG



THE MINER FILES

■ The cheat code was changed to 'typewriter' for the Software Projects release.

» [ZX Spectrum] When all lives are lost, it's time for the *Monty Python* boot to squish Willy.



EUGENE

EXIT DOOR

MUTANT TELEPHONE

▶ The individual 20 screens form another character in *Manic Miner*. From the Central Cavern, complete with its lone *Yellow Submarine*-inspired robot, to its author's homage to arcade games such as *Donkey Kong* (Miner Willy Meets The Kong Beast) and *Pac-Man* (Processing Plant), there are references behind most of the offbeat denizens. In fact, with levels such as Endorian Forest, The Bank, Abandoned Uranium Works and Eugene's Lair all displaying some sort of nod to the Eighties, *Manic Miner* can easily be viewed as a unique snapshot of a decade that gave us blockbuster movies, nuclear paranoia and yuppies. And everyone remembers the first time they encountered those Skylabs, crashing down perilously close to Miner Willy's head, or the Solar Power Generator with its air-sapping beam randomly stabbing at our hero.

In addition to the levels, the lost mine's inhabitants became forged in Spectrum lore, a tribute to the imagination of the game's creator. The bespectacled and rotund Eugene springs up and down his lair; penguins shuffle backwards and forwards in the Cold Room; and Pac-Men, now with legs, bounce around the Processing Plant, eager to munch on anyone foolish enough to get near. Even the static enemies, spiders, slime, spikes and plants are plotted deviously, and often require perfect jumping in order to pass by unscathed. In the successful commercial years of the ZX Spectrum that followed, there were many tough games – yet few could match the ferocious challenge of *Manic Miner*'s rigorous screens.

And on top of this problematic perch stands the Solar Power Generator. "It's sort of complicated… but it's not a particularly hard level," noted Matthew innocently in **Retro**

Gamer's Making Of *Manic Miner* back in issue 48. Containing much of the infamous pixel-perfect jumping that permeates the game, this penultimate screen also sends a random beam of light at right angles which rapidly diminishes the miner's air supply. Together with Skylab Landing Bay, it remains one of the most challenging pieces of gaming ever.

As befits its classic status, *Manic Miner* was released several times throughout the Eighties. Firstly, there's the original Bug-Byte version, which came in two different cassette inlays. In the first, a chubby Miner Willy is running away from a robotic hand, clutching a ladder and some gleaming treasure. For the Liverpool company's second release, the cover is much altered, depicting a bearded, god-like Willy holding a lantern and looking aghast at a bony hand before him. Later in the same year, when Matthew formed his own company, Software Projects, *Manic Miner* was released for a third time, this time with a wonderfully abstract Roger Tissyman inlay. Gone was Willy himself, save for his trailing boot, as a bulbous telephone – no doubt inspired by Attack Of The Mutant Telephones – chases ▶

AS BEFITS THIS 8-BIT CLASSIC, IT HAS BEEN CONVERTED TO A WIDE RANGE OF FORMATS. HERE'S THE LOWDOWN ON THE 12 OFFICIAL VERSIONS OF MINER WILLY'S FIRST ADVENTURE

DRAGON 32/64

■ Playing in the higher resolution black and white mode, Dragon 32 *Manic Miner* nevertheless retains most of the game's ambiance and gameplay, and even manages to cram in an extra two screens: The Dragon Users Bonus and The End. It may be the only version of the game that lacks colour, but that shouldn't stop you from enjoying it. A very valiant attempt indeed.

ORIC 1

■ Amazingly, the Oric port of *Manic Miner* manages to out colour-clash the Spectrum. Beyond attribute issues, it's a decent stab at mining manically, with a slightly more cramped screen and a spooky rendition of Grieg's *In The Hall Of The Mountain King*. Boasting an extra dozen screens to the Spectrum original, it's one of the best Oric games out there.

GAME BOY ADVANCE

■ The brave explorer returned in 2002 for his very first handheld outing. The original game is presented with a graphical upgrade and Miner Willy's a lot sprightlier than he's ever been before, which certainly helps with timing jumps. This is a brilliant way to experience *Manic Miner* both old and new.

MSX

■ The MSX port, with its resonating tune and smart graphics, is one of our favourite 8-bit ports of *Manic Miner*. While it is essentially identical to look at, the superior power of the MSX computer gives this particular version of the game a chirpy edge, making it just as fun, if not more so than the Spectrum original. Be sure to give it a try.

SAM COUPE

■ Programmed by Matthew Holt and published by Revelation in 1992, this is a superb version of *Manic Miner*, unfairly consigned to a doomed computer. All of the original 20 levels are present, along with 20 new screens, there's a jaunty and catchy adaptation of the music and some fantastic cartoon graphics, most notably Willy himself.

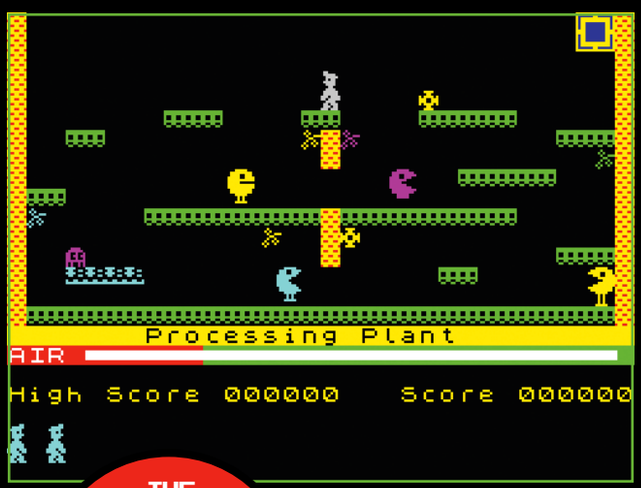
MOBILE

■ In 2010, Elite brought *Manic Miner* to the iPhone with an Android version following two years later, and there have been numerous updates since, as well as the release of *Jet Set Willy*. While it remains graphically and sonically a faithful adaptation, the touch controls do let the game down, although it's still the easiest way to play *Manic Miner* on the go.

» [ZX Spectrum] A subtle difference from the corresponding Bug-Byte level: there's a little ghost in the lower left hand corner

after him, its incongruous tongue salivating over the company's triangular logo. Finally, in 1989, Mastertronic issued this now-venerable marvel on its Mastertronic Added Dimension label, Roger Tissyman's cover topped with a new logo and budget price. Despite two changes in physical appearance and publisher, the game itself remained consistent, with the only notable alterations being some alternate amoebatrons, the Software Projects logo appearing in the Warehouse and a cheeky little ghost replacing a bush in the Processing Plant.

***anic Miner* gained effusive reviews upon release.** Under the strapline of "Penguins Make Life Perilous!" multi-format magazine *C&VG* declared the Spectrum game full of "humour, horror and wholesome addiction" before scoring it a solid nine out of ten. *Personal Computer News* went a step further, awarding Willy's first adventure a perfect score of five out of five. "The graphics and sound are both superb," concluded reviewer Mike Gerrard. "And I haven't enjoyed a game so much since I first encountered *Donkey Kong*." Awards followed, most notably the *C&VG* Golden Joystick for best Arcade Style game, and the game's author became an overnight celebrity. Having left Bug-Byte to form his own company, Software Projects, with Alan Maton, Matthew was soon busy working on the next dramatic episode in Miner Willy's life, *Jet Set Willy*. Yet while that huge and open world game also has its legions of fans, for many, it's the noble first explorative adventure of our fearless potholer that remains the most celebrated of his adventures.



While not the most original of videogames – *Manic Miner* owes a debt to the Atari game *Miner 2049er* – the verve and eccentricities of Matthew Smith's game helped cement its position as an illustrious standard-bearer for the ZX Spectrum. Each screen is a well-designed madness, but a test that can be planned for and overcome by a careful and cunning gamer. While subsequent games eclipsed it in terms of technical achievement, in 1983, *Manic Miner* presented a number of tricks and gameplay elements that were virtually unknown at the time. From the opening scene in the Central Cavern, accompanied by the chinking bars of *In The Hall Of The Mountain King*, through to the sun-drenched Final Barrier, it remains the ultimate test of a gamer's reflexes and patience, and a true 8-bit superstar.

» [ZX Spectrum] Miner Willy's encounter with Donkey Kong is shown here, and there's a switch to activate or not, depending on whether you wanted to kill the beast or let it escape.

» [ZX Spectrum] Collecting ten pence pieces in Attack Of The Mutant Telephones.

THE MINER FILES

■ In *Your Sinclair*'s final issue, *Manic Miner* featured at number 6 and 25 of the readers' and magazine's top 100 Spectrum lists.

THE MINER FILES

■ The phones in Attack Of The Mutant Telephones are based on Matthew's own telephone, a BT 300 series model.

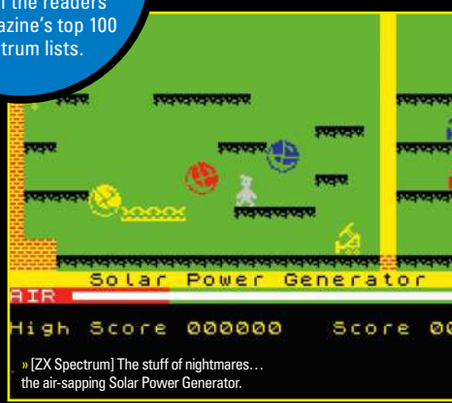
THE MINER FILES

■ The player has the option whether to kill the Kong beast in its two levels, making the only violence in the game a choice.

"Matthew would show up at the office occasionally, although he didn't have much input on this port"
STEVE WETHERILL

SEAL

» [ZX Spectrum] He's back! And he's meaner than before, as are the platforms.

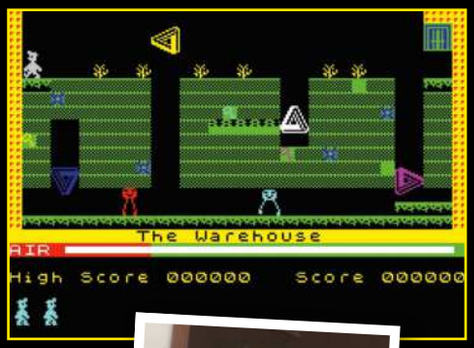


» [ZX Spectrum] The stuff of nightmares… the air-sapping Solar Power Generator.

» [ZX Spectrum] A comment on capitalism, complete with bouncing cheques.

THE MINER FILES

A third game in the series, *Miner Willy Meets The Taxman*, was announced, but never released.



DEVELOPER INTERVIEW

RETRO GAMER CHATS TO STEVE WETHERILL, PART OF THE TEAM BEHIND MANIC MINER'S AMSTRAD CPC CONVERSION

How did you come to work on *Manic Miner*?
I was nominally working on *Manic Miner* from the day I was hired. However, Software Projects couldn't figure out which platform. We looked at the Tatung Einstein, the Spectravideo and MSX, but for whatever reason they didn't get off the ground. When the Amstrad came out, tools and documentation were readily available and I was finally able, along with partner in crime, Derrick [Rowson] to get started. It was my first job in games.

Were you familiar with the Spectrum original?
Of course, and it was like a dream come true to work on *Manic Miner*. It was one of the first games I ever bought, although I don't believe I ever fully finished it without cheating. It's brutally difficult in places!

What was different in your version?
In a way, everything, because we wrote it from scratch. In some cases, we had to disassemble the original game to figure certain things out, but in general the goal was to do as accurate a conversion as possible. We spent a lot of time making sure that the gameplay was intact, with the pixel-perfect jumps – that was essential!

The Final Barrier screen is substantially different…
Honestly, I don't recall why. But if I had to guess, I'd say it was because that section would have taken less memory to store on the Spectrum due to the use of colour attributes, so we may have run out of space.

Was Matthew Smith involved at all?
Matthew would show up at the office occasionally, although he didn't have much input on this port. I think he has some criticism of the main title screen which used to say 'Amstrad CPC' and which he pointed out was kind of redundant. Other than that, I don't recall much input from him.

What did you try and improve?
Well the music is arguably better! Gotta love the Spectrum beeper, but the AY chip in the CPC made for a cleaner sound. The way the sprites were drawn was much more efficient than the original and we made use of some hardware features to avoid having two copy screens. That saved a lot of memory and increased performance. The original game had two off-screen copies of the screen used for composing the room and then erasing and redrawing all the sprites. When I first realised how it worked, I was amazed at how inefficient that approach was and that it didn't matter anyway. I think I agonised about performance too much in those early days.

Were you pleased with the final game?
Yes, and we went on to port – and significantly expand – *Jet Set Willy*, AKA *Jet Set Willy 2* when it was ported back to the Speccy. And, since this was my first commercial game, that was something very cool to have under your belt.

MAM

AS GAMING TECHNOLOGY GOES, IT DOESN'T GET MUCH SIMPLER THAN NINTENDO'S GAME & WATCH LCD HANDHELDS. BUT EMULATING THEM ACCURATELY, AND PRESERVING THEM DIGITALLY, IS SUCH A CHALLENGE THAT NINTENDO ITSELF HASN'T EVEN ENTERTAINED THE IDEA. WE MEET THE MAME BENEFACTORS WHO'VE DEVOTED THEIR TIME AND TALENT TO DOING WHAT NINTENDON'T **WORDS BY MARTYN CARROLL**

You'll be aware that you can play the arcade version of *Donkey Kong* on the MAME emulator. You probably also know that you can play the multitude of console and computer ports too, since MAME merged with its sister emulator, MESS, back in 2015. Yes, you can even play the Intellivision version, if you so wanted.

But did you know that you can also play the *Donkey Kong* Game & Watch handheld game on MAME? In fact, you can play all 60 official G&W games in MAME right now, from the first release, *Ball*, to the final one, *Mario The Juggler*. And it's as close as you'll get to playing the real thing. There's artwork available that provides the background layers that many of the games require, and even displays the body of the unit (with animated buttons to boot). Look around – all of the screens used in this feature have been grabbed directly from MAME. For anyone who played a G&W game as a kid – perhaps one of the more common ones that were sold in catalogues and toy stores back then – it's amazing to be able to now experience the whole eclectic range.

Given its history, it's hardly surprising that MAME is still seen as just an arcade emulator in many people's eyes. But with the addition of G&W and other electronic games, this is something that veteran MAME developer David Haywood hopes will start to change. "The progress made in areas like this will hopefully help challenge the perception people have over what MAME is and what it can do," he says. "MAME is often seen in the media as some project from two decades ago, where you can take an 18-year-old version, throw it on some cheap single-board computer, and play some arcade games. This viewpoint is a poor reflection of what MAME really is and doesn't do justice to the hard work that has been done in other areas. G&W emulation really shows that MAME is capable of so much more with the right dedication."

> "WHILE SEARCHING GOOGLE PATENTS FOR SOME OBSCURE CHIP I FOUND THE PATENTS FOR THE KONAMI LCD GAMES"
> **SEAN RIDDLE**

For G&W, that dedication was an international effort from a team of folk, stretching back several years. As with any community project, multiple people have been involved at different times in various work streams, so it can be difficult to pin down the exact chain of events. But a good place to start is in 2013, when MAME contributor Sean Riddle chanced upon some interesting patents. Sean, a computer programmer from Oklahoma, has been hacking hardware since the Nineties and has always had an interest in 'oddball' processors.

"While searching Google Patents for some obscure chip," he tells us, "I found the patents for the Konami LCD games *Top Gun*, *Gradius* and *Teenage Mutant Ninja Turtles*. Along with the schematics of the games were drawings of the LCD panels and the full contents of the ROMs! I bought the games off eBay and opened them up, but instead of normal chips, they had 'globs' of epoxy. The die of the chip was glued to the printed circuit board, with tiny wires connecting it to traces on the board, then it had been covered in epoxy to protect it. So I couldn't get to all the pins, including an interesting one labelled 'TEST'. I used a hot-air gun to soften the epoxy so I could remove it, but some stuck to the die. That's when I had to learn about acids."

Sean is describing the process of decapsulating, or 'decapping', a chip. This involves removing the material that protects the die of the chip, allowing the die to be seen. Once it is decapped the ROM data can be visually read from the chip. As for the chip itself, the patents revealed that the handhelds used a 4-bit Sharp MCU (Microcontroller Unit) from the SM5xx family. Around the same time, another MAME contributor 'digshadow' discovered that G&W used the same MCU.

Sean continues, "I eventually mapped the bits on the dies to the bits in the ROM data from the patents. This let me dump other games visually. The G&W games use a normal chip instead of ▶

MAME & WATCH

SEAN RIDDLE

American Sean was instrumental in getting the project started, thanks to his decapping and dumping work. His top G&W title is *Mario The Juggler* "since I also juggle".

HENRIK ALGESTAM

Henrik from Sweden took up the mantle from Sean and dumped the bulk of G&W games. He also cracked the 'melody ROM'. His G&W title of choice is *Climber.*

RYAN HOLTZ

American Ryan helped to acquire the majority of G&W units, personally and through crowd funding. *Squish* is his go-to G&W game, "for the sheer playfield complexity".

LEE ROBSON

Englishman Lee designed and edited the supporting artwork for most of the games. His favourite G&W title is *Rain Shower* because, "It makes me feel close to home."

DAVID HAYWOOD

David's from the UK and he's an advocate of advances made in MAME. The game he keeps coming back to is *Oil Panic* "for its effective use of the dual screen set-up".

BY DESIGN

THERE'S MORE THAN ONE TYPE OF GAME & WATCH...

SILVER APRIL 1980

The original models featured a simple, silver-coloured surround that gave the series its name. There were five games in the range – *Ball, Flagman, Vermin, Fire* and *Judge* – and they were simple too, with *Vermin* and *Fire* being the standout pair.

GOLD JANUARY 1981

The surround was now gold, and they came with a foldaway stand, but these were otherwise identical to the Silver models. The titles were *Manhole, Helmet* and *Lion*. *Helmet* was released in the UK as *Headache* and is highly prized these days.

WIDE SCREEN JUNE 1981

The format began to find its stride here, thanks to a larger screen and some strong titles, including three licences: *Popeye, Mickey Mouse* and *Snoopy Tennis*. Seven further titles made up the range, including *Parachute, Octopus* and a remastered *Fire*.

MULTI SCREEN MAY 1982

The introduction of dual screens proved to be a masterstroke, as did the debut of the famous Nintendo d-pad on *Donkey Kong*. The range was very popular, with 15 titles in total released, including several where the screens were side-by-side.

NEW WIDE SCREEN OCTOBER 1982

The 'New' was added thanks to the addition of colourful metallic surrounds to the standard Wide Screen design. Eight titles were released, including updates of old releases, some new ones, and 'standard' versions of games that were released in other ranges.

SUPER COLOR FEBRUARY 1984

Despite the name, and the taller footprint, these were like a throwback to earlier designs, with the colour provided by a simple overlay. Only two titles were released – *Spitball Sparky* and *Crab Grab* – which suggests that the format didn't land well.

CRYSTAL SCREEN JUNE 1986

The last range to be introduced was a real showstopper. These elegant devices featured wide surrounds and transparent screens. The trio of games – *Super Mario Bros, Climber* and *Balloon Fight* – were later re-released in the New Wide Screen format.

MICRO VS SYSTEM JULY 1984

Another clever design decision saw the addition of two tiny joypads that slotted into the body of the handheld and allowed for versus play. The three titles were *Boxing* (known in the US as *Punch-Out!!*), *Donkey Kong 3* and *Donkey Kong Hockey*.

TABLE TOP APRIL 1983

As the name implies, you couldn't slip these in your pocket. Designed to resemble mini coin-ops, the big selling point was the introduction of colour screens. Four titles came in this format: *Donkey Kong Jr*, *Mario's Cement Factory*, *Snoopy* and *Popeye*.

PANORAMA SCREEN AUGUST 1983

These retained the colour screens of the Table Top range, but they were more portable thanks to a foldout design. The titles were a mix of existing Table Top games and new ones, including *Mario's Bombs Away* and *Donkey Kong Circus*.

an epoxied die, so I was able to experiment with the 'TEST' pin. When a signal was applied to it, ROM data was output on some pins! But it turned out that only one 'page' of ROM was output, and there were 44 pages on the chip. I posted the info on a forum and a fellow named Igor Rychenkov shared the process that he discovered to dump the ROM from the Russian clone of the chip, and it worked on these."

Having dumped the ROM contents, the next step was to digitise the LCD screens, in order to grab the 'graphics' for each game. The trick was to somehow photograph the screen with all of its segments showing. "I tried taking photographs of the LCD displays, but using a flash caused reflections and shadows that were difficult to clean up," continues Sean. "There's also the problem of identifying the contacts used to turn on each segment. I wound up cutting up the printed circuit board from one of the games. I cut a hole so that the LCD panel could be backlit and soldered 37 wires to it so I could control each segment independently. LCDs are fairly complex, and to avoid damaging them alternating current must be used, and different voltage levels are needed to avoid 'ghosting'. To get a picture with all of the segments enabled, all the common signals are connected and all the segment signals are connected, then a 3v AC signal is connected to each group of signals. The resulting picture has to be cleaned up to remove dust, scratches and visible crystals, then vectorised with a program like Potrace to create an SVG (Scalable Vector Graphics) file."

As Sean worked on dumping the games in his possession, real life intervened and he had to dial back his involvement. "I had done something like a dozen Konami games, five G&W games and about 100 Tiger Electronics games when my free time got squeezed. The G&W games were by far the most desired, but they were more difficult for a couple of reasons. The LCD panels on all 112 of the Konami and Tiger games were identical, which meant that the same printed circuit board could be used for all of them. In contrast, practically every G&W panel is different. That means a new printed circuit board has to be made for each game. In addition, most of the Konami and Tiger games are fairly common and inexpensive, so it wasn't impractical or unethical to destroy the games to decap the chips and read out the ROM data. The G&W games are less common and more expensive. At this point Henrik Algestam contacted me and wanted to help but didn't know anything about it. Luckily for me he's smart and driven and had the time. He improved on my techniques and dumped all of the remaining G&W games. I'm certain that people would still be waiting on the files if he hadn't taken that on."

> "THE HARDEST PART OF DUMPING AND EMULATING THESE UNITS WAS ACTUALLY GETTING HOLD OF THEM IN THE FIRST PLACE"
> **HENRIK ALGESTAM**

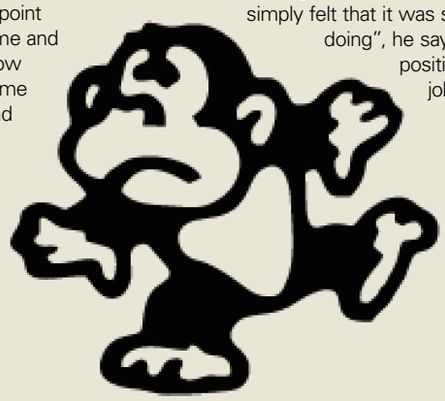
Henrik Algestam is a software development consultant from Sweden. He was able to take Sean's work and run with it. "I've always been fascinated by the G&W handhelds," he reveals, "but wasn't involved in preservation until I read about the first G&W games being emulated in MAME in 2017. Once I read up on how this was achieved and learnt about decapping, I contacted Sean and offered him some of my games for decapping. I had many questions about the process and eventually I was able to dump the games myself thanks to his help."

To simplify the process of photographing the LCD screens with all of the segments enabled, Henrik designed custom PCB breakout boards for the different screen variants. "The later colour G&W games are interesting as the LCD display is inversed so that active segments are translucent and a colour inlay provides the colour graphics. What makes these games a bit more difficult to dump is the way the display is assembled in a sandwich-style way with more layers than the standard G&W games."

One element that was easier to digitise were the static background layers that the majority of G&W titles feature. These often just add a visual flourish and splash of colour to monochrome games, but sometimes they're required for the game to be playable (such as the red girders in *Donkey Kong*, or the bumpers and buffers in *Pinball*). "The colour backgrounds are simply scanned with a standard desktop scanner and used in MAME as a background layer behind the LCD layer," says Henrik.

With the dumping process refined, there remained just one stumbling block – the scarcity of some G&W titles. Given their appeal, and their place in Nintendo's history, many of the rarer releases are in the hands of collectors. They can be picked up on the open market, but they often go for silly money, particularly the early Silver and Gold models, and the coveted Crystal Screen releases. "The hardest part of dumping and emulating these units was actually getting hold of them in the first place," says Henrik. "A few were my own but sourcing the remaining ones has been a team effort. Ryan Holtz has helped out with funding to acquire most of the G&W units."

Ryan Holtz is an American ex-pat currently living in Sweden who works as a programmer at Arrowhead Game Studios. As a long-time contributor to MAME, he watched the preservation effort from the sidelines for a while, before stepping in to help secure the required units. "I simply felt that it was something that needed doing", he says. "I'm in a lucky enough position to have a programming job at a decent salary, thus I tend to contribute funds towards digital preservation when and where I can. Vintage hardware certainly isn't getting any cheaper, after all. For the most part, nothing was



terribly elusive, just expensive. A significant bulk of the G&W library was acquired in one go, when a collector here in Sweden was auctioning off what he had accumulated over the years. I knew it would end up costing a lot, and with that in mind I turned to Twitter, friends and even a few co-workers. Around 70 people in total contributed anywhere from 5-250 USD in order to make it happen. There were 34 units in the auction and the final price ended up being about 1,900 USD."

The remaining units were then located one by one. "The hardest individual unit to track down was *Donkey Kong Circus*, and that was also the most expensive, ending up costing around 1,000 USD," says Ryan. "Fortunately, an anonymous benefactor had appeared by that point and was willing to personally cover the last few acquisitions."

Right now you're possibly wondering if these expensive acquisitions become sacrificial lambs to the slaughter, with the units having to be destroyed in order to be dumped? Thankfully this was not the case. By the time Ryan became involved, Sean, with the help from Igor, had figured out how to dump the chips electronically. "The first few units were dumped using the acid decapsulation technique," says Ryan, "which is naturally destructive to the unit itself. Once a method for dumping them electronically was discovered, quite a few units were able to be reassembled and resold in order to fund the acquisition of other units.

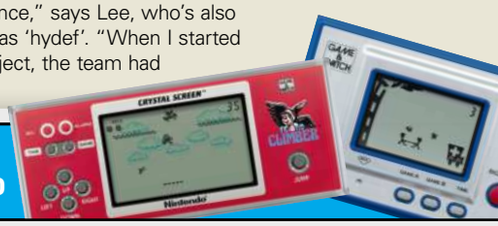
"That said, the last generation or two of G&W releases had an additional 'melody ROM' in order to have a more compelling auditory experience than simple 'beep' and 'bip' noises. Although Henrik was able to develop a method to more or less recover the melody data, those particular games will still need to be decapped for full optical verification of the ROM contents."

> "ALL OF THE CASES ARE BASICALLY FRANKENSTEINS OF WEB FINDS THAT I COBBLED TOGETHER, STRAIGHTENED AND RECOLOURED"
> **LEE ROBSON**

The job of writing the SM5xx emulation and adding it to MAME was undertaken by the contributor known as 'hap' who lives in The Netherlands. He has programmed for MAME since 2008. "Sean and I had already been working on the emulation of early handhelds, mostly games like *Simon* and *Merlin*. It was only natural that other handhelds were to follow, and indeed, we emulated a lot of handheld games and added them to MAME," he explains. "Around 2015, Sean started decapping the Konami LCD handhelds and the first game I got playable in MAME was Konami's *Top Gun*. Sean decapped more games, including some G&W. There was a bug in the emulation that caused most of the G&W games to be unplayable. It turned out to be one-line fix, and suddenly the games made correct noises and responded to inputs."

One remaining problem was how to display the SVG files that held the graphics in vectorised format. "Another MAME developer, Olivier Galibert, added an SVG renderer to MAME to solve that part," says hap. "That's when the ball got rolling and my programming for the MCU emulation and MAME driver was mostly done at this point. New game additions were mostly a matter of copy and pasting, since the games run on very similar hardware. I helped Henrik when he ran into problems adding new G&W dumps to MAME, but other than that, not much more programming was needed. Overall it was a lot of work and a lot of collaboration with other people. It was fun."

The final touch – the artwork for the games – was provided by Lee Robson, who hails from Newcastle in the UK. "The artwork is something that was desperately needed to complete the experience," says Lee, who's also known as 'hydef'. "When I started this project, the team had



ELECTRONIC TONICS
GREAT GAME & WATCH RELEASES THAT STILL HOLD UP

FIRE
People are bailing out of a burning building and, as the rescuers on the ground, you must bounce them over to the waiting ambulance. The hectic gameplay and high melodrama ensured that this was the first release to really strike a chord – and it remains great fun.

TURTLE BRIDGE
Using turtles as stepping stones, you have to trek back and forth across a river. However, the turtles often get distracted by passing fish and dive underwater, breaking the 'bridge'. Another simple concept that's anything but sedate, as you frantically try to avoid the drink.

OIL PANIC
The first Multi Screen release really delivers on the concept. In the top screen, you catch the oil drips in your can, and when it's full, you empty it over the side – ensuring that the guy with the barrel below is lined up. Clever co-ordination and quick skills are the order of the day.

DONKEY KONG
While everyone remembers the bright orange case, the game is pretty memorable too, being an approximation of the coin-op's opening stage with the addition of a crane-swinging finale. It was the format's first big seller and for many it remains the defining G&W release.

MARIO BROS
Unlike *Donkey Kong*, this outing was not based on the original coin-op. Instead of flipping critters in the sewers, Mario and Luigi are putting in a shift at a bottling company, working in tandem to avoid costly breakages. This is another game that makes good use of the dual screens.

» The popular Multi Screen format debuted in 1982 and would go on to influence the design of the Nintendo DS handheld 22 years later.

already dumped and emulated a fair few of these games and produced some basic artwork. There was also an attempt on the forums by a member to implement the casing into the picture as well and that inspired me to also try and do this, but the best quality I could."

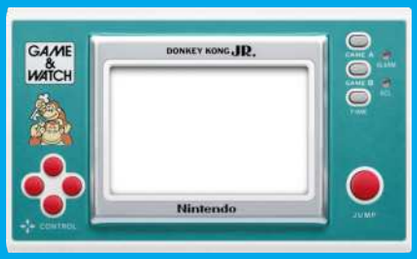
The addition of the cases is something that really brings G&W to life on MAME. They look almost better than the real thing, which begs the question, how has Lee managed to replicate them with such clarity and accuracy? "This may surprise some people, but I've never physically had any of these G&W games during the project. I only played some of them at school in the late-Eighties. All of the cases are basically Frankensteins of web finds that I cobbled together, straightened and recoloured. I then made these into a template that I could modify into new games since the different G&W models – Silver, Wide Screen, Multi Screen and so on – all have a particular styling. So for you to say that the artwork looks almost better than the real thing is a great compliment, as I don't actually know how they look in reality. The end product is supposed to look like a sort of promotional shoot on a plain surface for playing on your desktop ▶

THE ART OF GAME & WATCH

HOW THE DIFFERENT ARTWORK ELEMENTS COME TOGETHER

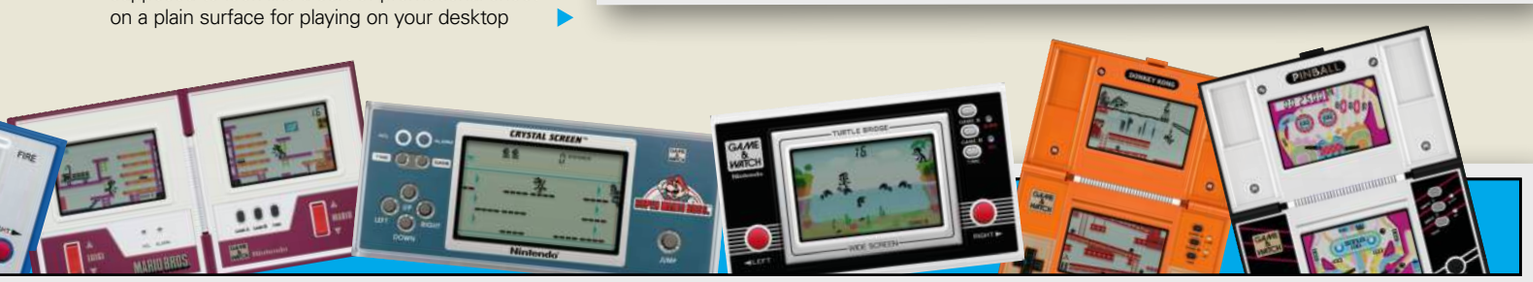
1 A photograph is taken of the LCD screen with all of the segments enabled. This is then vectorised to create an SVG file which is zipped up alongside the ROM data.

2 The background layer is scanned with a conventional scanner and then touched up to improve the colours. A separate version with a slight depth effect is also produced.



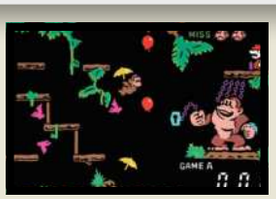
3 The case is created using a mixture of photos, scans and images from the internet. Templates are created so that it's easier to create cases for games in the same range.

4 When the artwork is added to MAME, the SVG file, the background layer(s) and the case image are combined to create the composition. It's as close to the real thing as it gets.



PINBALL

This was the 38th G&W release overall, and yet Nintendo kept redefining what was possible with the LCD technology. Here we have a pinball sim that presents a nice-looking table that's surprisingly playable. The sound is a little grating, but at least you can mute that in MAME.

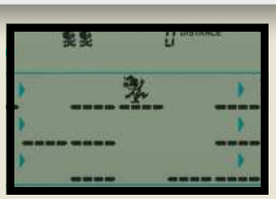


DONKEY KONG JR

The first Table Top game, and therefore the first G&W release with colour graphics. It's different to the earlier New Wide Screen game, and not necessarily better, but the colour really pops as you traverse a jungle maze and cross a river on another quest to rescue DK.

SPITBALL SPARKY

The G&W range is full of oddities and the Super Color format is chief among them. This game, however, is one of the most inventive available, being a clone of *Breakout* that shouldn't really work, but somehow does. The other Super Color game, *Crab Grab*, is also worth a look.



SUPER MARIO BROS

It wasn't a shock to see *SMB* added to the range, but it was surprising to find that it (kinda) resembled the NES game – including multiple scrolling levels. A wonderful game to play, especially if you're lucky enough to experience it on the original Crystal Screen model.

CLIMBER

Similar to *SMB*, but with vertically-scrolling levels, this is perhaps an even better game. Using the platforms, you climb ever upwards, dodging enemies as you go. You even get to battle an evil dragon boss at the summit! For many G&W fans this remains the go-to game.

MODERN MAKEOVERS

WE EXAMINE THE BEST OF NINTENDO'S FUNKIFIED UPDATES

MANHOLE

From the first *G&W Gallery* (1997), *Manhole* was one of four early titles given a fun modern makeover. Here, Yoshi has to raise the manhole covers to prevent Toads and other irritants from falling through. This original Game Boy title was colourised on Super Game Boy.

VERMIN

This update is the highlight of *G&W Gallery 2* (1998). The rats from the original are replaced by invading Koopas, Fly Guys and Boos which Yoshi must smash before they attack his eggs. Yoshi now moves in a circular direction; the result is akin to a super cute version of *Tempest*.

MARIO'S CEMENT FACTORY

This perhaps should have been retitled *Mario's Cookie Factory*, because now Mario has to manage the flow of cookie dough through his death trap of a factory. At least the lifts are now more forgiving. This was one of 11 updates included on *G&W Gallery Advance* (2002).

PARACHUTE X OCTOPUS

G&W Collection 2 for Nintendo DS (which was a Club Nintendo exclusive) features classic versions of *Parachute*, *Octopus* and this, a clever dual screen mash-up of the two. The action alternates between saving parachutists and stealing treasure from octi's lair.

DONKEY KONG 3

Another charming update found on *G&W Gallery Advance*. Scrawny Stanley from the original is replaced by Mario (of course) who faces off against Donkey Kong in a bubble blastathon. In a neat touch, this and fellow Micro Vs System game *Boxing* offer a two-player link-up mode.

» Nintendo hasn't forgotten about G&W, as evidenced by the limited edition handheld released to celebrate the 35th anniversary of *Super Mario Bros* and the *Zelda* Game & Watch announced at this year's E3.

» The G&W craze kicked off in April 1980 with the release of *Ball*. Several later games would revisit the simple juggling theme.

» There are 60 G&W titles in total – 59 retail releases, and this special edition of *Super Mario Bros* which was given away as part of a competition in Japan. It was limited to 10,000 units.

▶ PC. It's meant to look clean and elegant. Some people don't like that part of it, but I was doing what I like." Lee spent around 18 months working through the backlog and then began to include the new releases as they were added to MAME. "After a while of catching up with the new releases I partnered with Henrik and he'd send me scans of the background layers and scans of the cases if I needed them. This meant that I was able to release the artwork before the next version of MAME. For the background layers I fiddled with the colours depending on how I thought they should appear and gave the graphics a depth/shadow effect, to mimic the polarisation process. I let users have different viewing options so that they can play how they like, by turning the shadows off or even removing the case and being left with only the screen. I think they look good as just screens too. They even have a frame."

Lee worked on the project as a hobby and it was a labour of love – for the most part. "Everything required a lot of going back and forth to refine the way things looked," he admits. "Trying to maintain consistency across the units often meant having to change many files in my templates and the code which decides where they're drawn on the screen. I eventually quit the project shy of doing the lot because it was affecting my mental health and I love to self-sabotage everything I do. Fortunately a fellow called Matthew Marino [DarthMarino] picked up the last few and finished them using earlier assets and his own background work."

The G&W project was effectively completed in August 2020 when the final game, *Donkey Kong Hockey*, was added to MAME (in version 0.223). There are still some items on the to-do list, but these mainly involve dumping rare ROM variants and the 'melody ROM' verification issue that Ryan mentioned. The end result is another coup for MAME and a landmark in game preservation.

"It's definitely a milestone, but also a phenomenal display of teamwork and technical accomplishment," reflects David Haywood, who has produced videos of all of the G&W releases running in MAME for his YouTube channel (search for 'mamehaze'). "Reaching the milestone was the culmination of many years of work and improvements to the MAME codebase to allow for it. It was also a moment of realisation, seeing that MAME could do something that even just ten years ago was considered impossible, and not only do it, but do it convincingly. Many ventures within MAME end up hitting brick walls, where a limit to our understanding is reached or technical roadblocks cannot be overcome. Some also end up stalling as those involved simply become burnt out. But here, the teamwork on display, centred around a driven group of developers with complementary skills, saw this one to fruition. It's something that will remain a highlight of recent development for years to come."

David is also optimistic that it will encourage others to embark on similar projects. "I hope it makes people more curious about the technology they do own and spurs research for cases that are still problematic. Outside of G&W there are still hundreds, if not thousands of similar handhelds, but instead of using known MCUs they're using COB [Chip-On-Board] technology, where everything is self-contained on a die under a single epoxy glob. For many of these there is still no clear path to getting them emulated. Seeing that MAME is capable of handling the emulation side, I hope it might motivate more people to look for solutions to the technical hurdles."

> "NINTENDO COULD, AND I EVEN FEEL SHOULD, REISSUE THE GAMES ON A MODERN PLATFORM"
> **DAVID HAYWOOD**

Now that all of the G&W titles have been emulated, there's always a chance that Nintendo might want in on the progress. After all, the company has revisited the G&W concept multiple times in the past, including the seven compilations released between 1995 and 2008, and the versions later released as DSiWare. And of course, there was the *Super Mario Bros: 35th Anniversary* G&W released in 2020 that was modelled on the Gold range and featured an updated version of the very first G&W title, *Ball*. It's easy to imagine a complete collection for the Switch at some point.

"Nintendo could, and I even feel should, reissue the games on a modern platform," says David, who emphasises that it would cost Nintendo nothing to license them. "The MAME code specific to supporting the G&W units is all available under the BSD 3-Clause licence, which makes it as easy as possible for Nintendo to come along and use that code. The licence doesn't place any restrictions on using it in closed source commercial projects, as long as proper accreditation is given. The recent *Capcom Arcade Stadium* is able to use properly licensed code from current versions of MAME for this reason too. Community emulation ventures shouldn't be seen as at odds with the commercial market, but instead be seen as something that complements it – especially when we're dealing with material like this." *

Many thanks to all of the interviewees for their enthusiasm for answering endless questions.

MAME MILESTONES

KEY UPDATES IN THE QUEST TO PRESERVE HANDHELD ELECTRONIC GAMES

MAY 2017 0.186

G&W title *Mickey & Donald* was actually added to Release 0.164 in July 2015, as a non-working game. Here it is finally promoted to working, and included alongside *Boxing*, *Donkey Kong II* and *Mario's Cement Factory*. Several Konami handhelds are also added.

JULY 2017 0.188

The first batch of handheld games from Tiger Electronics are supported, including *Double Dragon*, *Gauntlet* and *Sonic*. More Konami games are added. In terms of G&W, *Mickey Mouse* and its clone *Egg* are now supported, and some titles receive vector backgrounds.

OCTOBER 2018 0.203

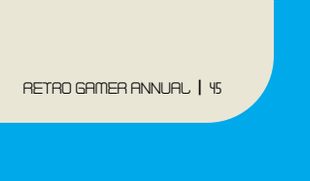
After a brief hiatus, support for the remaining G&W titles returns in earnest. This release sees perhaps the most popular game added, the original *Donkey Kong*, plus fellow Multi Screen title *Green House*. Over the next 12 months the bulk of G&W games are added.

AUGUST 2020 0.223

With support for the Micro Vs System title *Donkey Kong Hockey* added in this release, all 60 official G&W titles are working in MAME – an amazing achievement by all those involved. A number of items are still on the to-do list, but all of the games are now perfectly playable.

FEBRUARY 2021 0.229

MAME (and MESS before it) had included support for some Mattel Electronics games previously. More titles are added here, including *Hockey*, *Soccer* and *Basketball*. Work is underway on supporting the first ever handheld LED game, *Mattel Auto Race* from 1976.



THE HISTORY OF R-TYPE

WHEN R-TYPE ARRIVED IN ARCADES IN 1987, HORIZONTAL SHOOT-'EM-UPS WERE NEVER THE SAME AGAIN, AND THE SERIES HAS CONTINUED TO REPRESENT THE BEST THE GENRE HAS TO OFFER EVER SINCE. WE SPEAK TO KAZUMA KUJO TO FIND OUT HOW THE SERIES HAS EVOLVED, AND WHAT'S COMING NEXT

WORDS BY NICK THORPE

Many games have unforgettable moments, but few have moments that transcend the game itself and become iconic of the entire genre. *R-Type* is one of those games – a game which stands alongside the likes of *Scramble* and *Gradius* as a milestone in the evolution of the horizontal shoot-'em-up, and a game which has been plundered repeatedly by imitators. But then, the game's own successors have leaned just as heavily on the most memorable parts of the original game, while evolving just enough to ensure that the series has always represented the best that the genre has to offer.

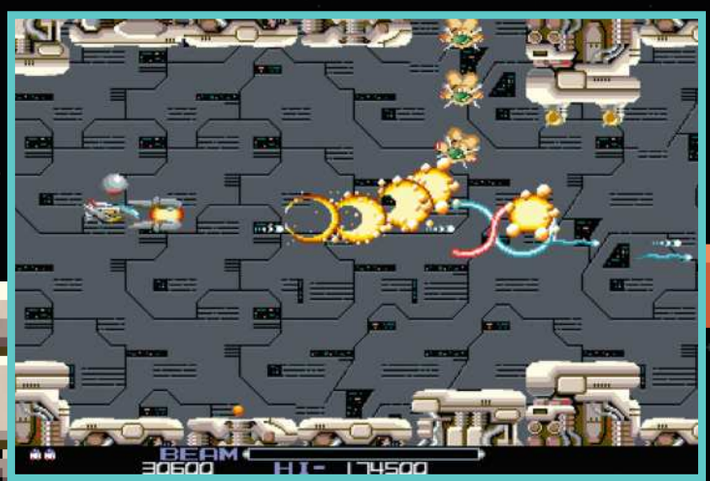
R-Type is a horizontal shoot-'em-up that pits the player against the evil forces of the Bydo Empire – later established to be living weapons, created by humanity. According to a developer interview from *Gamest* magazine, translated by shmuplations.com, the genre was chosen as a way to show off the developer's new 16-bit arcade hardware. In many ways, *R-Type* was similar to other games in the genre such as *Gradius*, challenging not only the player's reflexes but also their memory, as there are optimal ways to play each stage and death can cost you your power-ups. But *R-Type* carved out a distinct identity thanks to some mechanical innovations and memorable stage design.

The first of these innovations was the Wave Cannon attack, a powerful shot achieved by holding the fire button for a few seconds. "The Wave Cannon is a mechanism that allows for strong attacks without power-up items," says Kazuma Kujo, who joined Irem in the late Eighties during the development of *R-Type II*, and has been involved in the series' development since *R-Type Delta*. "I think this function was lucrative in creating a strategy against hostiles that can instantly target the player's weak spots." Though he wasn't directly involved in creating the game, Kujo remembers the insight of those that were. "In regard to the Wave Cannon, while the beam it fires is important, the charge gauge at the bottom of the screen is also crucial. The developers told me that the reason they chose to use such a long gauge for the charge despite working under strict hardware limitations was to express the charging of the energy in a more dynamic way. I even heard that the gauge's maximum length was meant to match the length of the beam at maximum charge."

While the Wave Cannon is memorable, the Force is the signature mechanic of the *R-Type* series. This drone unit can attach to the front or back of the R-9A Arrowhead ship you pilot, or be deployed as a floating, semi-autonomous unit. In the *Gamest* interview, the designer refers to it as a joke born from the idea of a dung beetle – and that you would power up the ball, rather than the ship, with Laser Crystals. "It takes some skill to master, but I think it's interesting how ▶

"I THINK THIS FUNCTION WAS LUCRATIVE IN CREATING A STRATEGY AGAINST HOSTILES THAT CAN INSTANTLY TARGET THE PLAYER'S WEAK SPOTS"
KAZUMA KUJO

» Kazuma Kujo oversaw the *R-Type* series at Irem for many years, and now leads *R-Type Final 2*'s development studio, Granzella.



» [Arcade] Enemy formations in *R-Type* are highly rigid, so memorisation will go a long way to helping you succeed.

» [Arcade] Even the nastiest of bosses will succumb to you quickly when you know how to deal with them.

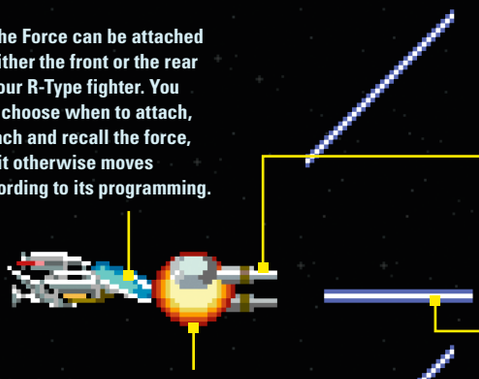
"THIS BOSS' CHARACTERISTIC DESIGN IS FASCINATING, BUT I THINK THERE IS A KIND OF INDESCRIBABLE FEAR FROM ITS COMBINATION OF BIOLOGICAL AND MECHANICAL ELEMENTS"

KAZUMA KUJO

» [Arcade] The concept of a gigantic multi-screen battleship would prove influential across the genre – it's been copied a lot.

FEEL THE FORCE

DISCOVER WHAT MAKES R-TYPE'S ICONIC POWER-UP TICK



The Force can be attached to either the front or the rear of your R-Type fighter. You can choose when to attach, detach and recall the force, but it otherwise moves according to its programming.

This glowing orange core is made of Bydo tissue, and is virtually indestructible. It can be used to absorb incoming fire, and even as a battering ram with which to destroy enemy craft.

These metal control rods inhibit the growth of the embryonic core, preventing it from maturing into a fully-formed Bydo. They also contain thrusters to direct the movement of the core.

By passing energy from the R-Type through a coloured laser crystal, the Force produces different kinds of laser attacks – traditionally anti-surface for yellow, anti-air for red and reflection for blue.

REINFORCEMENTS

DON'T LIKE THE REGULAR FORCE? HERE ARE SOME OF THE MANY ALTERNATIVES AVAILABLE

1. SHADOW FORCE

This tricky force, first seen in *R-Type III*, is ideal for players that want to cover every direction – particularly with the blue laser, which will fire in the opposite direction to the ship's movement.

2. CYCLONE FORCE

If you like to get up close and personal with the Bydo baddies, this does enormous damage on contact. It's ideal for players that like to fling the Force around, rather than hiding behind it.

3. TENTACLE FORCE

Introduced in *R-Type Delta* and taking inspiration from Irem's own *X-Multiply*, this Force's control rods can spread out for interesting whip-style attacks, as well as providing an excellent defensive barrier.

4. ANCHOR FORCE

Another Force that comes from *R-Type Delta*, but one that's good for throwing around. This one is tethered to your R-Type fighter and clamps onto Bydo with its control rods, dealing major contact damage.

5. BYDO FORCE

If you've had enough of being pummelled by the opposition, why not unleash their own evil against them? This stable, controlled Bydo organism is capable of some rather icky biological attacks.

6. MR HELI FORCE

Here's a treat for the nostalgic Irem fans – it's Mr Heli!

the changing of its position was expressed and that the fun of this game is that you couldn't change the Force's position from the front to the rear with a press of a button. The process of mastering this is the fun of playing *R-Type*," says Kujo, before divulging some more details from the original team. "At the beginning of development it seemed it was difficult for the Force to be understood as an 'ally'. At the start, it wasn't surrounded by metal rods as it is now. It seems that these rods ended up being devised to make the Force not look like an enemy unit. I also was told by someone who was in charge of development at the time that the Force's mechanic of appearing from the left side of the screen was so that it wouldn't be mistaken as an enemy."

» [Arcade] You can see *R-Type II*'s search laser in action here, with 45-degree bends to aid in targeting.

» [Arcade] While the second game's battleships were smaller, there were more of them to contend with through the stage.

For all of the great shooting mechanics, *R-Type* wouldn't have been nearly as memorable had it not been for the visually impressive stages and the malevolent monstrosities that inhabited them. The bosses in particular made an enormous impression on players, with the *Alien*-inspired first boss Dobkeratops gaining truly iconic status amongst fans. "This boss' characteristic design is fascinating, but I think there is a kind of indescribable fear from its combination of biological and mechanical elements," says Kujo. "The first *R-Type* boss scene song you hear perfectly matches Dobkeratop's visuals and leaves a strong impression. It is a symbolic boss of the *R-Type* series in every sense."

The third stage also drew the attention of players, as they flew around a huge battleship that served as both the setting for the stage and its boss. "I heard from the person in charge that it was made on the basis of being a stage of defeating enemies larger than the screen," remembers Kujo. "At the time of development, it seems he was thinking about making it the final stage. But because other development staff found this stage impressive and there were a limited number of players who could reach the final stage of the arcade game, he decided to make it the third stage set in a mountainous area." The concept of a fight against a giant battleship has become symbolic of the series too, and is often duplicated in later games.

» [Arcade] The new multi-directional Wave Cannon attack in *R-Type II* was great for clearing wide areas.

R-Type made its arcade debut in Japan in 1987, and was an instant smash – Japanese arcade operators surveyed by the trade magazine *Game Machine* ranked it as the best earning non-dedicated game for three whole months, dethroning Capcom's *1943*, and it would hang around the top ten rankings into early 1988. In the US, the game was picked up for distribution by Nintendo, becoming the first dedicated cabinet the company had offered since *Punch-Out!!* three years earlier. Reviewing the arcade game, *Commodore User* noted that while the concept wasn't original "what it does, it does so incredibly well", and described the first boss as "one of the most loathsome and graphically complex monsters captured in an arcade game yet". The review concluded that *R-Type* was "one hell of a game" and awarded it a 9/10 score.

The game's popularity meant that it was soon converted to a wide variety of consoles and computers, where it achieved even more success. Particularly notable conversions included a very good Master System version by Compile that featured an extra exclusive bonus stage, a technically extraordinary ZX Spectrum version coded by Bob Pape, and the Amiga version that Factor 5 was compelled to create due to legal threats. The best of the lot was the PC Engine version, which was as close to arcade perfection as was possible at the time, and served as a fantastic advert for NEC's console. Even the fact that the Japanese HuCard release was split into two parts didn't diminish the impression that conversion made, though the complete game was later issued on CD-ROM complete with a remixed soundtrack.

It's no surprise that *R-Type II* was quickly put into production, and the developers chose to make modest changes to a successful formula. In fact, the second war against the Bydo maintained an entirely familiar rhythm. Like the first game, the opening stage saw you flying into a base from open space. The second took you into a cave of fast-moving creatures – this time filled with water – and the third pitted you against not one large battleship, but several slightly smaller ones that still dwarfed your own R-9C War-Head. That too was a redesigned version of the R-9A from the original game. One thing that was notable was that the game was harder. "*R-Type II* became more difficult because it was necessary to stoke the desire to challenge and overcome within fans who thoroughly enjoyed playing *R-Type*," says Kujo.

One of the major changes that was made was to the weaponry available. "There were many original ideas for lasers and Wave Cannons from the first *R-Type*, so I've heard that new weapons were taken from there, chosen to be used as differently as possible from the original three lasers," Kujo tells us. A new two-stage charging process was introduced for the Wave Cannon, with the first step unleashing the standard blast and the second launching a new multi-directional attack. Additionally, two new Laser Crystal power-ups were introduced – the green Search Laser, which adjusts in the air to find targets, and the grey Shotgun Laser, which fires a short range explosive shot.

Released in December 1989 in Japan and to the rest of the world in 1990, *R-Type II* didn't have the same impact as the original. Rankings in *Game Machine* show it as having a strong start, entering the chart in second place and staying in the top ten for the month that followed, before declining over the following two months until it left the top 25. *R-Type II* was popular with the UK press, though most noted the game's similarity to its predecessor. *Zzap!64* claimed that "Irem are marketing the sequel as an upgraded version of the original and that's about all it is", while *Your Sinclair* noted that the game "feels more like a set of additional extra levels for the original game than a brand-new one".

R-Type II didn't receive the same wide home release as its predecessor,

initially appearing in well-received Amiga, Atari ST and Game Boy versions. But the game did find a second life as the basis for *Super R-Type* (1991), a SNES game that heavily remixed the arcade original. Four of the original six stages came across, joined by three brand-new stages, and the new grey and green weapons had their functions replaced too. Reviewers at the time gave this version a reasonably warm welcome, but had their reservations. In *CVG*, the reviewers awarded it 91% in spite of complaints that while it was "one hell of a good conversion and a great game", *Super R-Type* "ought to be flawless on a machine like the Famicom". *Raze* awarded it 77%, noting that "you get more than five sprites on-screen and the whole game locks up", while *Super Play Gold*'s retrospective review awarded it 72%, noting the slowdown and "an infuriating lack of restart points".

In the arcades, Irem decided to take the series in a different direction. *Cosmic Cop*, or *Armed Police Unit Gallop* in Japan, is a spin-off that is officially considered to be related to the series and has been referenced in later games, but doesn't bear its name or use its signature mechanics. Instead, the next game to bear the *R-Type* name would be *R-Type Leo*. "*R-Type Leo* originally began as a new shooting game. By the time I was shown this game during a test play, it had a different title. After that and discussions with those from various positions and the development team, it was given the *R-Type* handle and the non-numbered title of *Leo*," Kujo recalls. "I support this change because while *R-Type Leo* doesn't have a Force or a Wave Cannon, signature side-scrolling shooter-game tactics and gameplay elements such as the utilisation of space in front of and behind the fighter made it into the game," he says.

R-Type Leo differs from the main series games in many ways – much more natural imagery is used in the stage themes, and two-player simultaneous play is possible for the first time. Rather than the standard Force, *R-Type Leo* allows players to equip with two Psy-Bit devices, which provide auxiliary fire that can be switched to give rear cover. "You can say that the Psy-Bit installed in *R-Type Leo* is an evolved form of the *R-Type* equipment," says Kujo. While *R-Type Leo* is considered to be a bit too different from the norm to count as a main *R-Type* game, Kujo still respects its place in the history of the series. "I believe the Force is an essential element of *R-Type*, but *Leo* is the title that showed us new possibilities for the *R-Type* series. We were inspired by *Leo* in the production of *R-Type Delta*, *R-Type Final* and *R-Type Final 2*."

R-Type III: The Third Lightning was the first wholly original *R-Type* game to be developed for the home market, and was handled by Irem's Tokyo subsidiary, previously known as Tamtex. Some new mechanical wrinkles helped to freshen up the *R-Type* formula, which by now was well-known by players. This game reverted to the standard three Laser Crystals, but introduced the choice to select your Force at the start of the game. The standard Force was joined by two new types, the Cyclone Force and the Shadow Force, each of which offered different weapon capabilities. *R-Type III* also introduced a new Hyper Wave Cannon mode, which allowed for consecutive shots once charged but had a cool-down period that the regular Wave Cannon didn't. Fortunately, perhaps in part due to being designed for the SNES from the very start, *R-Type III* didn't have the technical problems with slowdown and flickering sprites that had plagued *Super R-Type*. Better yet, what it *did* have was some smart boss designs that used the system's famed Mode 7 for rotation and scaling.

Japanese players got *R-Type III: The Third Lightning* in 1993, with other markets following in 1994. "Gone is the slowdown, the jerky graphics and unintelligent baddies", proclaimed *CVG*'s review. "In are three new weapon system defaults, lashings of bolt-on weapons and clever Mode 7 effects which are part of the gameplay". The game scored 88% – a little higher than the 83% awarded by *Super Play*. "All those ideas may be getting a bit old now", the popular SNES magazine opined, "but when they've been twisted, moulded, morphed and improved to produce a game as impressive as this, what does it matter?". Raylight Studios later ported *R-Type III* to Game Boy Advance in 2004, but it is unfortunately rather less polished than the original SNES game.

» [SNES] As an early SNES game, *Super R-Type* struggled to maintain speed when the screen was packed with sprites like this.

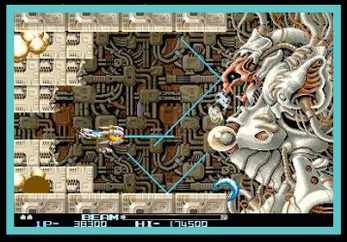
» [Arcade] In the early going, *R-Type Leo*'s space theme at least fit the series' established aesthetic.

THE ETERNAL ENEMY

NO MATTER WHAT YOU DO TO DOBKERATOPS, IT KEEPS COMING BACK FOR MORE – HERE ARE ALL OF ITS APPEARANCES SO FAR

R-TYPE

Here's the classic enemy – the horrific beast with hideous flesh covering unfathomable internal technology, and a nasty little green abdominal growth.



R-TYPE II

The Bydo had the technology, and they rebuilt Dobkeratops in the heavily armoured Zabtom. You won't recognise it unless you destroy its helmet.

R-TYPE III: THE THIRD LIGHTNING

Dobkeratops Albino is a slightly spikier version of the original, with an alternative black version to fight in the second loop of the game.

R-TYPE DELTA

This variant, known as Subkeratom, can be knocked out when you attack its traditional abdominal weak spot – but that's when the trouble starts.

"IN THE PROJECT'S FIRST DRAFT, A COMPLEX POWER-UP SYSTEM WAS CONSIDERED BUT WAS LATER CHANGED TO THE ABILITY TO SELECT CHARACTERISTIC AIRCRAFT IN THE RE-PLANNING STAGES"
KAZUMA KUJO

The series fell dormant after *R-Type III*, in part thanks to Irem's decision to wind down game production for a time. Kujo would briefly leave the company to form Nazca, where he would work on the original *Metal Slug*, but returned in time for his first direct involvement with the series. Having tested the waters with *R-Types*, a PlayStation compilation of *R-Type* and *R-Type II*, the company was convinced that a brand-new game in the series could potentially be profitable. From this, *R-Type Delta* was born. This new game didn't do much to mess with the winning formula the series had established, with familiar attack waves and even some classic bosses returning, but it did give the series a fresh coat of polygonal paint. "I was prepared for opposition against the 3D graphics, but I got a more favourable reception than expected," Kujo recalls.

One of the major additions was a new ultimate attack. "From the planning stages, *Delta* was an *R-Type* title designed for home gaming consoles. With those that purchased the game being able to play as far as they can in mind, I decided to implement an attack that could purge all bullets on the screen while still maintaining a certain level of difficulty," says Kujo. "The core function of *R-Type* is the Force, which incorporates the power of the Bydo, so we made it possible to accumulate energy by absorbing bullets or directly damaging the enemies." This reward for using the Force as a shield became known as the Dose system, which would return in both *R-Type Final* and *R-Type Final 2*.

While that concept survived from planning to completion, another one was changed heavily ▶

R-TYPE FINAL

■ This encounter with Dobkeratops is almost sad – it appears to be hooked up to some kind of life-support system. That sadness ends when it starts attacking.

R-TYPE FINAL 2

■ Frozen over yet still ready for revenge, Dobkeratops returns to serve as the first stage boss here – once you've released it from its icy prison of course.

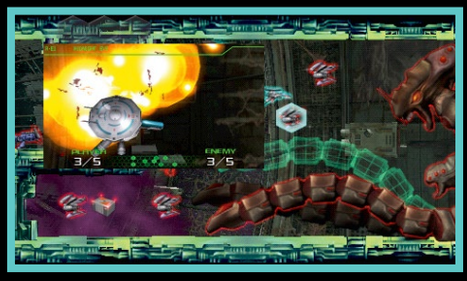
TACTICAL SHIFT

HOW R-TYPE PIVOTED TO TURN-BASED STRATEGY IN ITS POST-SHOOTING YEARS

Fans around the world were shocked for two reasons when *R-Type*'s PSP return was announced. Firstly, the series was supposed to be finished, as *R-Type Final* made clear. Secondly, the new game – *R-Type Tactics*, or *R-Type Command* in North America – wasn't a shooting game at all. Instead, the series would move to turn-based strategy.

The original *R-Type Tactics*, released in 2007 in Japan and 2008 elsewhere, retained some of the series' signature trappings. Like the shooting games, it is viewed from the side, but with units now assigned to positions on a hexagonal grid. You can choose from many of the spacecraft from the shooting games, and just as in those games they always face the right of the screen, confronting the left-facing Bydo menace. However, freed from the burden of direct control over a ship, you can now command large fleets in battle. The game offers plenty to get through, with 58 missions to complete, and received mildly positive reviews.

***R-Type Tactics II: Operation Bitter Chocolate* arrived in 2009, once again as a PSP exclusive and this time as a Japan-only release. The gameplay remained broadly the same, but a new story featured the Bydo as well as two human factions, the Earth Allied Armed Forces and the Granzella Revolutionary Army. The game supports importing a profile from the first game, allowing you to continue with your previous save. Though there has been no official English release for this game, fans released an English translation patch in 2018.**



INTERSTELLAR IMITATORS

R-TYPE HAS INSPIRED QUITE A FEW GAMES OVER THE YEARS – HERE ARE SOME NOTABLE EXAMPLES

KATAKIS

■ This game, originally for the C64 in 1987 and ported to the Amiga in 1988, landed Rainbow Arts in hot water with *R-Type*'s official licensee Activision Europe. The developer was threatened with a potential lawsuit – *unless* it agreed to take on the official Amiga conversion of *R-Type*!

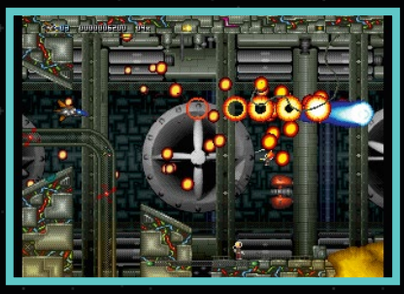
XEXEX

■ With Irem's shooting games having proven strong competitors to Konami's *Gradius* series, Konami decided to incorporate some of their innovations into this 1991 arcade game. As well as *X-Multiply*'s tentacle attack, this game's spacecraft has a detachable orb that works rather like *R-Type*'s signature Force.

PULSTAR

■ This 1995 Neo Geo game was developed by Aicom – a team founded by ex-Irem developers. The similarities to *R-Type* are undeniable, with a very similar Force, plenty of visual references and high difficulty. However, those lovely pre-rendered 3D graphics do visually set it apart from the real deal.

LAST HOPE



■ NG Dev Team released this rather tough blaster for the Neo Geo platforms and the Dreamcast, with the first arriving in 2007. Much like *Pulstar*, this one uses pre-rendered visuals, but bullets were difficult to spot in the initial releases. An updated version titled *Last Hope: Pink Bullets* remedied that.

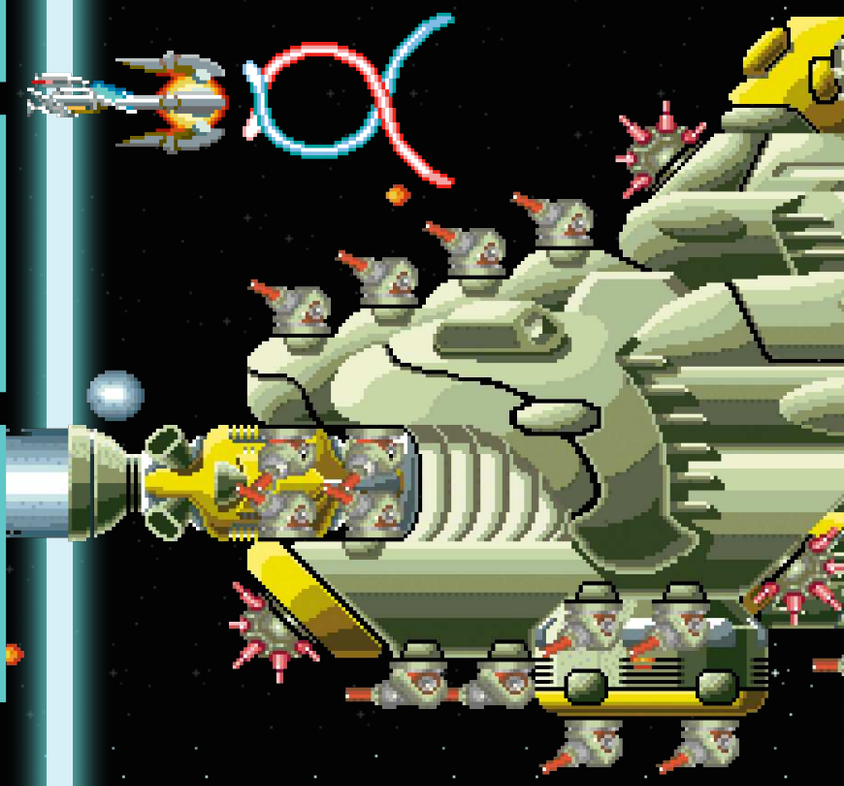
Z-EXEMPLAR

■ Rather than drawing its inspiration from the arcade version of *R-Type*, Suminell Studios clearly enjoyed Bob Pape's excellent Spectrum conversion – just look at that signature Sinclair look. *Z-Exemplar* was released in 2016 and is available on PC, Mac, iOS and Android, and also draws from *Gradius*.

» [SNES] SNES shooters rarely looked better than *R-Type III*, and the technical performance holds up well too.

▶ along the way. "In the project's first draft, a complex power-up system was considered but was later changed to the ability to select characteristic aircraft in the re-planning stages," Kujo says. "At the gameplay's start, I wanted the player to be able to choose according to their mood for the day and have the Force and Wave Cannon as different as possible from other aircraft to make their decision impactful. The artist responded and suggested aircraft with distinctive shapes and colouring." In the final game, the R-9A2 Delta was joined by the RX-10 Albatross and R-13A Cerberus, and Kujo notes, "These efforts to create unique fighters led to the planning of *R-Type Final* later."

R-Type Delta reviewed well upon its release in 1998, with *Play* magazine awarding it 90% and describing it as "simply amazing and amazingly simple to play". The *Official UK PlayStation Magazine* scored it 8/10, noting that "it doesn't do a great deal that previous versions haven't", but concluding "*R-Type Delta* is fun – surely a game's only remit?". Back in issue 51 of



Retro Gamer, Kujo said that *R-Type Delta* "was successful and sold well, but I'd have to say that we were hoping for more". Today, his feelings on the game are more forward-focused. "Because there was this title, there was 2003s *R-Type Final*, and now we're able to make *R-Type Final 2*. I think *Delta* was a title that allowed for new possibilities within *R-Type*."

That mixture of feelings surely have informed the team's decision to make a new game in the series, and to make sure it was the last. "At that time (and perhaps even now) side-view shooting games were no longer a mainstream genre, so it was a difficult type of title to gain popularity. *R-Type* was also known to be tough, so I thought it'd be challenging to release games of this genre in the future," says Kujo. "I felt sorry for fans who would want a sequel, so I chose a title that would denote it being the last *R-Type*." Indeed, there was no mistaking the intention surrounding *R-Type Final* – it was there to act as a last hurrah for the series.

While the game developed on systems introduced in *R-Type Delta*, *R-Type Final* was built to last. "Numbers in shooting games are very small. Many home console games lacked volume, such as 'you can choose from four fighters' and 'all seven stages,'" Kujo tells us. "I wanted to set numbers from the start that would be unthinkable for a shooting game and relay the notion that you could play for a long time, so I started developing 99 fighters. During development, we decided to add two additional graphical versions of the 99th aircraft, bringing the total to 101." This huge number certainly lent to the celebratory appeal of the game.

However, there's a change in atmosphere. From the moment you fly into the ruins of the first stage, the mood is sombre. Rather than sadness at the end of a great series though, Kujo wanted it to feel this way to fit the story being told. "It can definitely feel that way because it contains plot developments that don't lead to a happy ending, and I think that part carries over into *R-Type Final 2*," he explains. "It's unlikely that mankind will be unharmed in the battle against unknown lifeforms that attack from a universe beyond, and there will be various influences and circumstances awaiting the player's main character. This I wanted to create."

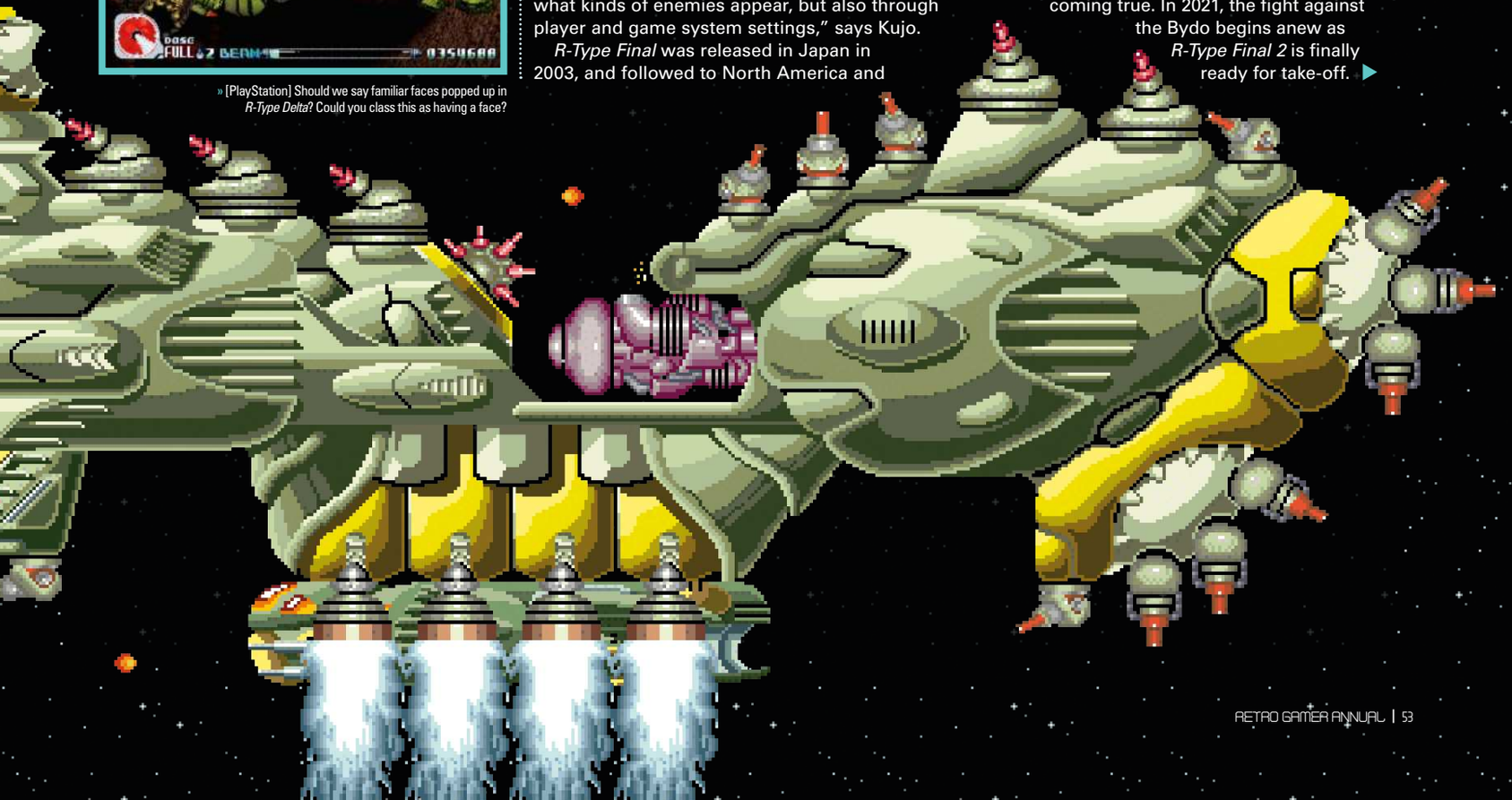
» [PlayStation] Should we say familiar faces popped up in *R-Type Delta*? Could you class this as having a face?

That fed into how the game ended, too. "The Force, the player's strong partner in *R-Type*, is made from Bydo fragments, so it felt natural to have Bydo influence on the fighter. I felt that weapons should evolve into something more powerful. That's why at the start of *R-Type Final*'s development, we chose to introduce 'Bydozation' of the player's aircraft," explains Kujo. "When the stage is cleared, how will Earth welcome the player who's been transformed into the Bydo? Such a question was considered for the final stage's setting." That's not the only possible ending, though. "The intention to have several final stages was there from the start. I wanted to make each of the final stages different not only in terms of what kinds of enemies appear, but also through player and game system settings," says Kujo.

R-Type Final was released in Japan in 2003, and followed to North America and Europe in 2004. The Japanese version was enthusiastically seized upon by the UK press, and earned some good scores. "*R-Type Final* takes all the elements that made the original great and then adds lush three-dimension backgrounds and other graphical treats", said *Play*, awarding it 89%. *Edge* gave the game 8/10, despite complaining of "several heavy doses" of slowdown, deciding that the game was still "close to the best in the genre".

» [Xbox 360] *R-Type Dimensions* is a fab remake of the first two games, which offers both original graphics and this neat 3D mode.

For the best part of two decades, *R-Type Final* lived up to its name. The *R-Type Command* spin-offs took the series in a different direction, and there were various releases of the classics, from the 3D remake *R-Type Dimensions* to Retro-Bit's cartridge reissue of *Super R-Type* and *R-Type III*. But a new shooting game was not forthcoming, and it appeared as if the series truly had become a thing of the past – especially as Irem had once again ceased to develop games, with Kujo leaving to form Granzella in 2011. However, the gaming world has changed considerably since the original *R-Type Final* was released, with many supposedly impossible dreams finally coming true. In 2021, the fight against the Bydo begins anew as *R-Type Final 2* is finally ready for take-off. ▶



So why, after all this time, did Kujo and his team at Granzella decide to revisit *R-Type* as a shoot-'em-up? "We thought if we made full use of the current development and gameplay environment, a new experience that's never been seen before in *R-Type* could be possible. I was surprised myself to discover that there were still many *R-Type* fans who wanted a new title," he explains.

The idea of a new *R-Type* seemed too good to be true for many players, and when it was announced on 1 April 2019, quite a few people simply refused to believe that it was real. "I was surprised," admits Kujo. "Quite a few people and the media asked me 'Is this real information?'" It didn't help that *R-Type Final 2* had previously been announced on 1 April back in 2005, as part of the reveal of the Exidna – a fake next generation console that was Irem's April Fool's Day joke for the year. But there was a reason for the choice, as Kujo explains. "For Japanese companies, April 1 can be considered the beginning of their year, so I was going to announce it during this period. Seeing everyone's reaction, I regretted going with this confusing timing."

» [PS4] A good Wave Cannon shot will still tear through early enemies like they're absolutely nothing.

***R-Type Final 2* has been Granzella's first experience with crowdfunding via Kickstarter.** "We're a small publisher, so to launch a new project we need to start with funding. Also, it's very important to see whether there is any real demand for the games we're going to make. Side-shooting is no longer a mainstream genre, and many companies are not so optimistic about releasing new side-shooting games," Kujo begins. "But rather than thinking negatively about the genre with such a mindset or wondering if fans wouldn't be impressed, we decided to ask the fans directly if, even now, they really want to play a side-shooter. Crowdfunding allowed us to see demand that had yet to be fulfilled and helped us a lot in moving forward with the project funding-wise".

Granzella is not about to reinvent the wheel, and is focused on simply providing more *R-Type* for fans. "Basic mechanics follow that of the previous *R-Type Final*, so there's no need to learn anything new," says Kujo. "*R-Type Final 2* focuses on visual enhancement, stage variations and the increase of collectable elements each time you play. So, those who played previous *R-Type* works and Tozai Games' *R-Type Dimensions* can enjoy it straight away." However, with almost 18 years separating *R-Type Final 2* from its predecessor, there is consideration for newcomers. "Players who never experienced the *R-Type* series should try the 'Special Weapon' that allows for emergency evasion via attack. If the difficulty is set to Easy, the 'Special Weapon' will charge quicker," advises Kujo.

» [PS4] Bydo botany is not something we'd particularly like to engage in – kill it with fire!

With the game design being very similar to that of past games, most of the extra capabilities of modern hardware have been used to improve the visuals, "Of course, the visual expression of enemies, backgrounds and aircraft can now be depicted with intricate details. Also, the 16:9 screen size is perfect for side-shooting games," says Kujo. For fans,

» [PS4] With the power of modern consoles, the more organic parts of the Bydo overgrowth look squelchier than ever.

» [PS4] Traditional weaponry like the classic anti-surface laser naturally returns for *R-Type Final 2*

that will translate to seeing past glories in a whole new way. "In the R Museum, a mode where you can view the fighter vessels, you can appreciate them from viewpoints not possible during *R-Type Final* and also take a closer look at each aircraft's shape," Kujo tells us.

But by far the most exciting trips to the past will be the remade versions of classic stages, as Kujo explains. "Since this was a campaign for fans, we wanted to have a plan that touched upon their memories of *R-Type*. In addition, we respect the previous *R-Type* titles our predecessors made (in which some of our previous work is included as well), so we set them as stretch goals," he tells us. "Unfortunately, some titles' stages did not reach the production stage. On the other hand, we are producing *R-Type*'s stage even though it hadn't actually reached its stretch goal."

While Kickstarter offered new possibilities for Granzella, did it cause any problems? "There were no problems, per se, but the game's development was a reserved operation so I feel sorry that there was a period of time when I couldn't visually report the project's progress and give information to those who supported me," says Kujo. "Overall, the people who backed us were friendly and encouraging and we were able to reach this point due to their moral and financial support. There are no words to describe how grateful we are."

Many of you will already know whether or not you're interested in *R-Type Final 2*, but Kujo has a final message for first time players that confirms the team's ambition for the game. "While there are no particular features for new *R-Type* players, the beginning stage on Easy difficulty has been made quite simple to clear. During this stage, we hope newcomers will get acclimated to the game. If it's still difficult, please let Granzella know and we'll add a mode that's easier to complete. On the other hand, if it's too easy we'll add a more difficult mode," he says. "As such, we'll continue to add and improve *R-Type Final 2* over the coming years because we see this title as a platform for *R-Type*. Thank you very much."

R-Type Final 2 is out now, and is available for PS4, Xbox One, Xbox Series S/X, Switch and PC.

[PS4] It's the classic wheel of death segment from the first game's first stage, but like we've never seen it before.

BYDO BYGONES

HOW R-TYPE FINAL 2 PROVIDES THE ULTIMATE R-TYPE MUSEUM

One of the greatest features of the original *R-Type Final* was the awesome R Museum. As you unlocked new ships to fight with, they would have their entries added to this museum, which would eventually grow into a comprehensive guide to the game's 101 *R-Type* fighter craft. Individual ship entries covered their history in the fight against the Bydo, with details including which companies manufactured them and how they developed from their predecessors, as well as explaining the function of their weaponry and allowing you to view each ship.

The R Museum is back in *R-Type Final 2*, and it looks like it will supplant its predecessor as the ultimate guide to the *R-Type* series. The R Museum is set out in a family tree style once again, charting the evolution of each main model of *R-Type* spacecraft, but this time it's possible to go right down to the floor of the museum, taking a first-person pilot's eye view to get up close and personal with each of the magnificent machines. Where the PS2 ships looked very much like models, the power of modern console hardware allows each craft to be rendered with a considerably greater level of detail than before, giving you a real appreciation for the mechanical design of each *R-Type* fighter. We may well also get new details pertaining to the latest operation in the seemingly never-ending war against the Bydo, too – a tantalising prospect, we're sure you'll agree.

THE HISTORY OF TURRICAN

A TALENTED GROUP OF GERMAN CODERS PUSHED THE TECHNICAL BOUNDARIES OF HOME COMPUTERS WITH THE TURRICAN SERIES OF RUN-AND-GUN GAMES. BUT THE GRAPHICAL SPLENDOUR WAS SET AGAINST A BACKGROUND OF BITTER DISPUTES

WORDS BY
LEWIS PACKWOOD

JULIAN EGGEBRECHT, STUDIO HEAD, FACTOR 5

AUDI SORLIE, CO-CREATOR, TURRICAN DOCUMENTARY

CHRIS HUELSBECK, COMPOSER

DENNIS MENDEL, COFOUNDER, STRICTLY LIMITED GAMES

It all starts, as so many of these stories do, with a group of kids messing around with computers. "I was finishing the equivalent of high school in Germany, in '89," says Julian Eggebrecht, now head of *Turrican* studio Factor 5, "and a bunch of friends of mine in my local town, we wanted to make Amiga games." Julian's hacker group had been working on Amiga follow-ups to *Paradroid* and *MULE*, but it was their remake of *Ballblazer*, called *Masterblazer*, that showed the most promise. And Julian, as the "only one who somewhat decently spoke English at the time", was given the job of finding a publisher.

Lucasfilm Games, which had developed the original *Ballblazer*, told him the rights were in the hands of its German distributor, Rainbow Arts. "So next day, I'm on the phone," says Julian, "and I got through to a new producer Rainbow Arts had just hired, which was Boris Schneider." Boris was a famous German gaming journalist and the official German translator for Lucasfilm Games, and the pair hit it off straight away. Boris immediately invited Julian down to the Rainbow Arts offices in Dusseldorf, where he met Manfred Trenz, designer of *The Great Giana Sisters*, and chiptune maestro Chris Huelsbeck.

"Manfred at the time was working on this tech demo on the C64," says Julian, "which was based on scrolling in all directions at the same time in really, really large levels." Coincidentally, the recently formed Factor 5, then made up of students developing games in their spare time, was working on the same technical challenge on the Amiga. Julian had met the founders of Factor 5 at a hacker party not long after the 1988 release of *Katakis*, a technically impressive *R-Type*-style shooter that the group had ported to the Amiga. But in the summer of 1989, all he wanted was to get *Masterblazer* published.

Julian worked out a deal for *Masterblazer*, even flying out with Boris to visit Lucasfilm Games at Skywalker Ranch in California, and by autumn it was pretty much done and dusted.

» [C64] The *Metroid* influence is clear in the way our hero can crunch up into a ball and roll around. Unlike in *Metroid*, however, you become invincible while curled up.

» [Amiga] The Amiga version of *Turrican* is widely agreed to be the best of the conversions, even though the C64 was the lead platform. The soundtrack is utterly fantastic.

Then a short while later, he received an unexpected phone call. "I was still living with my parents," recalls Julian, "and Boris said, 'Well, we just lost one of our producers, and you've been here, like, ten times in the interim, we hit it off really well at Skywalker, so why don't you join the company?' So I packed my bags, told my parents I'm going to put my university career on ice, and drove down to Dusseldorf." Julian vividly recalls this momentous journey: "The Berlin Wall had just opened, so when you were driving down the autobahn, there were West Germans with banners up welcoming East Germans, who for the first time were able to leave the Iron Curtain. It was pretty cool back then."

> "IT WAS BASICALLY A MIXTURE BETWEEN METROID, WITH LARGE, SPRAWLING LEVELS, AND ELEMENTS FROM A DATA EAST ARCADE GAME, PSYCHO-NICS OSCAR"
> **JULIAN EGGEBRECHT**

At the point Julian arrived, Manfred had developed his C64 tech demo into a prototype for what would become *Turrican*, and he was ready to start production. "It was basically a mixture between *Metroid*, with large, sprawling levels, and elements from a Data East arcade game, *Psycho-Nics Oscar*," says Julian. Players would take control of a bio-engineered warrior fighting a murderous ▶

» [C64] This snake beast might look fearsome, but all you need to do is duck and it can't hit you at all. Ha! In your face, snake beast.

AUDIO OVERDRIVE

CHRIS HUELSBECK EXPLAINS HOW HE OVERCLOCKED OLD MACHINES

***How were you able to get sampled speech into* Turrican?**
To get voice samples in there was extremely challenging. We did fragments and then pieced them together again with my sound-programming language. I had a system where every note or sound effect was actually triggering a small script – I called them 'sound macros'. And they enabled me to do things like splicing together voices. So, for example, for 'Power Up' and '1-Up', the 'Up' would be a separate sample, and then we would reuse that. It was a way of combining samples to keep the memory footprint low.

Did you do the voices yourself?
I know I did that intro voice of *Turrican* I. I didn't know that until a few months ago when Julian reminded me that I recorded that myself!

***How did you create seven sound channels on the Amiga for* Turrican II?**
Jochen Hippel was doing really great stuff on the Atari ST, including writing a sound driver that would emulate the Amiga sound chip. The main part was a sample mixer that would use the CPU to create the four Amiga voices. Then I thought, 'Hey, what if I use something like that so the CPU makes four voices in one channel on the Amiga, and then keep the other three Amiga channels pristine?' So then you could decide which sounds to play on the CPU-mix channels, because they would lose some fidelity, and which sounds you could use the other three Amiga voices that would be untouched. So I talked to Jochen, and he graciously gave me his source code, and I ported it back to the Amiga.

What was it like working on the Mega Drive?
The Mega Drive actually had three ways of generating sound. There was an FM chip in there with six voices. Then there was the old-style PSG, which was even simpler than the C64 sound chip, but that had four channels: three kind of melody channels that would play a simple synth wave, and one channel was noise. And then the guys from Factor 5 also took the concept of sample mixing and provided two channels of simple eight-bit samples, so I could use those for drum sounds and voices and stuff like that

That was pretty innovative, because the programmer, Thomas Engel, he actually used the Z80 processor, which is usually reserved in a Mega Drive for compatibility with the Master System. And the hardware requirements from Sega actually said not to use that Z80 in conjunction with the 68000 chip. I don't know what the reason was exactly: either they thought that the hardware couldn't handle it, or that it would overheat. My theory is that maybe they had planned a future Mega Drive without the Z80 part, without the Master System compatibility, and they didn't want to risk that some Mega Drive games wouldn't play on that. But that never happened.

"I SAID, 'CAN WE GET ONE PIECE OF MUSIC PER LEVEL?' AND CHRIS SAID, 'YOU'RE CRAZY, THAT'S LIKE 20 PIECES OF MUSIC!' AND I SAID, 'YES, BUT WE WANT TO MAKE THE GREATEST ACTION GAME EVER, SO LET'S DO THAT'"
JULIAN EGGEBRECHT

» [NES] Manfred Trenz created *Super Turrican* for the NES, but the lack of an MMC chip in the cartridge meant it could only be a cut-down version of the original *Turrican*.

▶ AI called MORGUL – although later games would swap the antagonist for an evil emperor known as The Machine.

Because Julian got along well with Manfred and Chris, he was put in charge of producing the new project, which the marketing department initially wanted to call *Hurricane*. But both Julian and Manfred felt the name was too boring and fought to get it changed; Julian says it was Manfred's idea to change the 'H' for a 'T'.

However, they faced a problem. "At the time, the C64 was starting to go down in popularity in Europe," says Julian. "So the Amiga was our main platform, and they had the crazy idea that Manfred would do the Amiga version." Manfred had never programmed on the Amiga, which had completely different architecture from the C64. "We all knew that Manfred would understand it, because he was a technological genius," Julian says, "but it would take way too long, and [the Amiga and C64 versions] needed to come out at the same time." Recalling that Factor 5 had been working on the problem of multidirectional scrolling on the Amiga, Julian got in touch with Holger Schmidt from the group, and asked him whether he could move down from Cologne to work on the Amiga port of *Turrican*. Factor 5's Achim Moller also stepped in to help with programming.

But *Turrican* was written in assembly code for the C64 MOS 6502 chip: code that was completely unintelligible to the Motorola 68000 chip of the Amiga. "So Holger sat down, he looked at the game and he played the game, and then rewrote it from scratch," says Julian. "But of course, he had Manfred right there, so if he had a question, he got a direct explanation." At the same time, Holger tried to maximise the potential of the more-powerful Amiga, for example by implementing much smoother scrolling. By January 1990, after two months of development, Holger's Amiga version had caught up to the same stage as Manfred's Commodore 64 one, which led to the pair

CONVERSION CAPERS:

COMMODORE 64
■ The original version developed by Manfred Trenz, awarded 97% by *Zzap!64*. It pushes the C64 to its limits, with around 1,300 screens and multidirectional scrolling, but a lack of spare memory means it doesn't have any music during levels.

AMIGA
■ The Amiga port was developed in tandem with the C64 version, although coder Holger Schmidt took advantage of the Amiga's extra oomph to deliver smoother scrolling and better graphics. It also features Chris Huelsbeck's excellent soundtrack throughout.

ATARI ST
■ If the Amiga version of *Turrican* can be considered the definitive one, then the Atari ST port runs a close second. Thomas Engel did a superb job of imitating the Amiga game, although it's let down by the Atari's weaker sound capabilities, resulting in somewhat bleepier tunes.

» [SNES] Not to be confused with the NES game, *Super Turrican* on SNES was a colourful joy, and mixed elements from the first two *Turrican* games.

developing a friendly rivalry. "And that was really nice," says Julian, "because then Holger was doing things on the Amiga which sparked Manfred, and he was like, 'Ah, I can do that on the C64, I'll show you this!'"

That left the final piece of the puzzle: Chris Huelsbeck's memorable soundtrack. Julian recalls that Chris was a habitual night worker. "He got up at 6pm and then worked 'til five in the morning. And we always worked 'til midnight anyways on the game development side, so at around six, when Chris got up, I was always hanging around with him in his studio while he was tinkering around with different soundtracks." Chris had created the score for *Masterblazer*, and Julian was a huge fan, so he approached him about the *Turrican* soundtrack. "I said, 'Can we get one piece of music per level?' And he said, 'You're crazy, that's like 20 pieces of music!' And I said, 'Yes, but we want to make the greatest action game ever, so let's do that.'"

Chris had started freelancing for Rainbow Arts when he was still at school in the Eighties, eventually joining as an in-house composer. He says that when it came to creating the music for *Turrican*, he was heavily influenced by Japanese games. "At that time, I was very aware of Japanese composers and the quality of music. I really liked the playfulness and the memorable melodies. That was the kind of thing that spoke to me, because that was my own aspiration: to find really memorable melodies." Chris envisaged the soundtrack as rock music mixed with synthesizer sounds. "I wanted it to be relatively fast-paced, so we opted to go for a rock beat," he says, "which was faster than the usual dance-speed stuff, so more like 150 to 180 beats per minute. And that gave it that driving feel during the gameplay."

» [SNES] This section in *Super Turrican 2* is highly reminiscent of *Contra III*, as you scale a building while holding off enemy forces.

The superb *Turrican* soundtrack even made it onto CD, a rarity in the Nineties. Chris released the *Shades* album in 1991, featuring music from *Turrican* and several other games he had worked on, and it was a commercial success – even though he was snubbed by record stores. "There was no interest whatsoever from the regular music industry," he says. "But we ▶

THE ORIGINAL TURRICAN THE MANY GUISES OF THE METAL WARRIOR

ZX SPECTRUM

■ Probe Software was given the job of porting *Turrican* to the Spectrum, with Von Dazzlin (aka Daren White) on coding duties. Mr Dazzlin did a good job of keeping the main gameplay elements and level layouts intact, but it pales in comparison to the C64 original.

AMSTRAD CPC

■ Another effort by Von Dazzlin, and again one which falls short of the C64 version. Nevertheless, it still remains one of the Amstrad CPC's more impressive games: *Amstrad Action* magazine gave it a 'Master Game' award, showering it with a 90% score.

CDTV

■ The 1991 CDTV release of *Turrican* was exactly the same as the Amiga version. It didn't even add CD audio – a lost opportunity to beef up Chris Huelsbeck's tunes. Nonetheless it's a great conversion, and the failure of the CDTV makes this port exceedingly rare.

GAME BOY

■ Accolade was in charge of the console releases of *Turrican*, and it handed over porting duties to The Code Monkeys. The Game Boy version just about works, and it's an achievement that most of *Turrican's* huge levels are in there, but it's hard to play on a tiny screen.

MEGA DRIVE

■ The Mega Drive game is similar to the Amiga version, although the soundtrack has become somewhat mangled in translation. The Code Monkeys added a much-needed jump button, but left it so 'up' also triggers jumps, leading to many an accidental leap.

TURBOGRAFX-16

■ Only released on North American shores, the TurboGrafx-16 version of *Turrican* was something of a disappointment. The third world is missing in action and Chris Huelsbeck's soundtrack has been gutted to leave only one track per world rather than per level.

didn't even really need it, because we had a connection to a game magazine that wanted to sell this for us. So right off the bat we had an order of 3,000 copies through the magazine." Chris also took a booth at the Amiga fair in Cologne to sell CDs. "We actually sold out by the second day, we didn't bring enough copies. So then we had to take preorders and manufacture more." All told, *Shades* sold around 12,000 copies, and it was followed by a full release of the *Turrican* soundtrack in 1993.

But the Commodore 64 version of *Turrican* was notably lacking in music. The reasons for this are threefold, says Chris. "When Manfred worked on the C64 version, he didn't have much CPU time left, because he was really pushing the Commodore 64 to the absolute limit. Also, I had already moved on to the Amiga, so I wasn't actually as keen to work on the C64. And the third problem was that Manfred had very specific ideas about how he wanted the music to be."

Julian elaborates: "Manfred had very strong ideas and a completely different musical taste from Chris. So Manfred came to Chris and basically said, 'I want you to convert this piece of music, don't compose your own.' And Chris was basically, 'Oh come on man, I can do something better.' And so they really didn't see eye to eye."

Towards the end of development, says Julian, the team decided the Atari ST had a big enough base in Europe that it warranted its own version of *Turrican*. "Holger and Achim said, 'Well, we know this crazy guy, Thomas Engel. He's been doing Amiga and Atari ST, and he's actually building our software tools. And I was like, 'Has he ever shipped anything on the ST?' They said, 'No, but it can't be that hard if it's just a crippled Amiga.' That was the attitude in Germany back then!"

By this stage, there was already talk of a sequel. "We already knew that we wanted to do *Turrican II* over the next eight months," says Julian. "And so I told Thomas, 'Okay, so here's the catch. We need to get out *Turrican* as quickly as possible on the Atari ST, so you first need to catch up and do that, and then you have to do *Turrican II* so that it comes out concurrently on the ST.' And Thomas said, 'Fine, let's do that.'" Thomas ended up doing a remarkable job on the Atari ST port, which came out a few months after the Amiga and C64 versions, although *Turrican*'s technically demanding multidirectional scrolling meant that he couldn't match the Amiga's smooth 50 frames per second. "But he did it in 30fps and he didn't cut out anything else, and that was pretty damn impressive on the ST," notes Julian. Jochen Hippel from Thalion also did a fantastic job of converting Chris' soundtrack by writing a program that emulated the Amiga's sound chip (see 'Audio Overdrive' on page 58).

Development of the 1990 Spectrum and Amstrad CPC versions of *Turrican* was handled by Probe Software. But Julian is quick to point out that he and his team had nothing to do with those "horrible *Turrican* conversions done by Accolade", which were released the following year. Rainbow Arts had handed over the console releases to Accolade, which contracted British developer The Code Monkeys to produce versions of *Turrican* for the Game Boy, Mega Drive and TurboGrafx-16. "We had no influence on that," says Julian. "We were all up in arms that they didn't tell us about even giving away the licence, and we absolutely hated that version. I mean, it was just god awful."

When it came to making a sequel, Julian had big plans for *Turrican II*. "I think one of the weaknesses in *Turrican* was it doesn't really push the Amiga," he says. "And partially, that was the graphics style." For *Turrican*, Manfred would design each graphical element using the C64's limited colour palette and pixel count, then these would be transferred to the Amiga with some added detail. But for the sequel, graphics artist Andreas Escher designed each element of the Amiga version from scratch. "That's why *Turrican II* looks so good on the 16-bit

"WE WERE ALL UP IN ARMS THAT THEY DIDN'T TELL US ABOUT EVEN GIVING AWAY THE LICENCE, AND WE ABSOLUTELY HATED THAT VERSION. I MEAN, IT WAS JUST GOD AWFUL"
JULIAN EGGEBRECHT

» [Amstrad CPC] The third world of *Turrican* sees our tin-can hero donning a jetpack for a vertically scrolling shoot-'em-up level.

» [Mega Drive] Even though *Turrican III* came out first, *Mega Turrican* was the original version of the game. It was actually held up by protracted publishing negotiations.

» [Amstrad CPC] The Amstrad CPC conversion of *Turrican II* was another fine effort considering the machine's limitations, although it's far from the best way to experience the game.

» [C64] This fistful of fun made another appearance in *Super Turrican* on the SNES, which styled itself as a 'best of' compilation of *Turrican* goodness.

machines," says Julian, "because we finally had a dedicated graphics artist."

This time around, the Amiga was the lead development platform rather than the C64. "That's why it diverges here and there in the later stages quite a bit from the C64 version," says Julian, "because Manfred couldn't do some of the things that were possible on the Amiga." The level design was also a team effort, with input from Manfred, Andreas, Holger and Julian, and Chris Huelsbeck returned to make what Julian declares is the "best soundtrack on the Amiga".

But even though the first two *Turrican* games received critical adoration for their technical achievements and fast-paced gameplay, Julian says that sales were poor – something he puts down to lacklustre advertising and weak UK distribution on the part of Rainbow Arts, along with rampant piracy. "Pirated copies got around everywhere," he says. "The frustrating thing is that especially on the Amiga version, Holger had spent an enormous amount of time on finding new compression schemes to expand the disk beyond what it was designed to do. So the retail version was all on one disk, but the pirates had to turn the game into two disks because only a professional replication house was able to replicate the disk format that we came up with. We hated the fact that everybody has played *Turrican* and *Turrican II* on the Amiga with pirated versions, because they had disk swaps."

And to top it all off, Accolade's console ports of *Turrican II* were even more of a

» [Amiga] The wind pushes you back at this stage of *Turrican II*, forcing you to find another way around.

» In addition to the compilations, SNES and Mega Drive carts of *Super Turrican 1 & 2* and *Mega Turrican* have been reissued by Strictly Limited Games and will hopefully ship this year.

DIGITAL RESTORATION

RETURNING SUPER TURRICAN TO ITS FULL GLORY

When Factor 5 was developing 1993's *Super Turrican*, the team thought it would be shipped on an eight-megabit SNES cartridge. But around three-quarters of the way through development, when the game was already clocking in at around six megabits, the publisher told the developers they'd only be getting a four-megabit cart, necessitating some frantic editing. "We had to cut out one of the stages which was already finished," says Julian Eggebrecht, and other elements were cut too, like the ability to use the plasma beam to freeze enemies.

Luckily, Julian kept a disk containing the original version of the game. Then in 2008, Nintendo asked whether Factor 5 wanted to put *Super Turrican* on the Wii Virtual Console, and Julian saw his chance to release the uncut version, which he submitted to Nintendo. But the Japanese firm wasn't happy with the switch. "They said, 'This isn't exactly the version that shipped.' I said, 'True, but this is the version it was intended to be, wouldn't it be cool to release that?' And it went all the way up to [Satoru] Iwata-san, and he put his foot down. He said, 'No, Virtual Console is Virtual Console. If this never shipped on a console, then you cannot release it."

Julian had to wait until 2017 for another opportunity to release the *Director's Cut* version of *Super Turrican*, with the advent of Analogue's Super Nt retro console. "The head of Analogue had read interviews of mine about the *Director's Cut*," says Julian, "and he said, 'We want to have something special in the Super Nt.'" Consequently, Analogue's console came with *Super Turrican Director's Cut* built-in, marking the first release of the cut content. But now, Factor 5 has teamed up with Strictly Limited Games to release the *Director's Cut* on the PS4 and Switch as part of *Turrican Anthology Vol 1*, which also includes the original SNES game, *Turrican* and *Turrican II*, and *Mega Turrican Score Attack*. "It's the first time that this version will actually make it out to a larger public," says Julian, "so I'm pretty thrilled about that."

» [Super Nt] Analogue's Super Nt was the first way you could commercially play the *Director's Cut* of *Super Turrican*.

UPGRADING TURRICAN

A TRIPTYCH OF RE-RELEASES ARE NOW AVAILABLE

To celebrate the series' 30th anniversary, ININ Games released *Turrican Flashback* on the PS4 and Switch. Costing €29.99, the *Flashback* collection includes *Turrican*, *Turrican II*, *Mega Turrican* and *Super Turrican*, and it will be available in physical form at retailers as well as in a digital version.

Meanwhile, Strictly Limited, which shares a parent company with ININ Games, has created *Turrican Anthology Vol 1* and *Vol 2* for hardcore fans. The first volume contains the Amiga versions of *Turrican* and *Turrican II*, the SNES games *Super Turrican* and *Super Turrican Director's Cut*, and *Mega Turrican Score Attack*, a unique title that was created by Factor 5 for the Gamescom expo. *Volume 2* features *Turrican III*, *Mega Turrican*, *Mega Turrican Director's Cut* (which restores the cut second stage) and *Super Turrican 2*, along with *Super Turrican 1 Score Attack*.

Each volume costs €34.99, and they're available through the Strictly Limited website, although cofounder Dennis Mendel says the company is additionally looking into offering a digital release. There's also a €99.99 *Collector's Edition* that includes both volumes in addition to various items, such as a soundtrack CD, art book and Blu-ray documentary featuring developer interviews conducted by Digital Foundry's John Linneman and Audi Sorlie. The even fancier €199.99 *Ultra Collector's Edition* has already sold out.

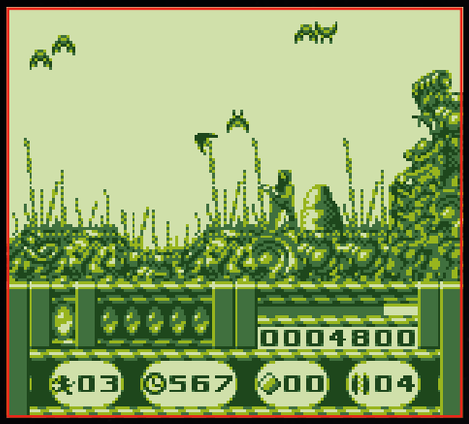
Audi, who has been helping to put the anthology together, notes that a few old bugs have been fixed, and each game now has an optional shader to mimic a CRT monitor. But he says the biggest change has been modernising the control schemes to banish the much-hated 'up to jump'.

The anthology doesn't include everything: notably missing are the C64 games, which Audi says is down to licensing issues. "We tried to get everything in there," he says. "But there are still certain aspects of the [C64 games] that are tied up in some sort of legal issue."

The decision to split the anthology across two releases has also caused some controversy. Dennis explains: "We had to evaluate how we can make this economically feasible. We can't ask for €50 or €60 [for a single release] when people see triple-A productions at the same price." He says the games might seem expensive, but that reflects the huge amount of effort that has been made to obtain licences and get them running on modern machines, not to mention the relatively small audience. "People don't see the work that goes into the emulation stuff: optimising, adapting control schemes, and everything related to the Sony and Nintendo guidelines."

One thing that has surprised both Audi and Dennis is finding loyal pockets of *Turrican* fans outside Europe, even though many of the games weren't released overseas. "People like Yuzo Koshiro, the *Streets Of Rage* composer, and [Naoki] Horii-san, who runs M2, I mean, they are huge fans of *Turrican*," says Audi.

» [Mega Drive] *Turrican II* got an unwelcome makeover on the Mega Drive, as Accolade reskinned it to tie in with the Jean-Claude Van Damme movie *Universal Soldier*.



» [Game Boy] The first two *Turrican* games were miraculously converted to the Game Boy, although they were extremely hard to play on the Game Boy's miniscule screen.

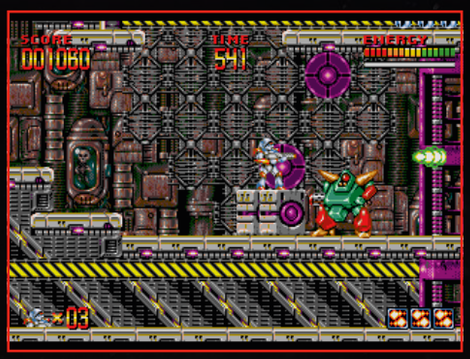
disappointment. The publisher had acquired the rights to make a game adaptation of the Jean-Claude Van Damme movie *Universal Soldier*, so they ordered The Code Monkeys to reskin *Turrican II* to tie in with the film. Accordingly, the walking eyeballs were swapped for mini tanks and the steel dragon boss for Dolph Lundgren on the Mega Drive and Game Boy. "God, that was so bad," opines Julian.

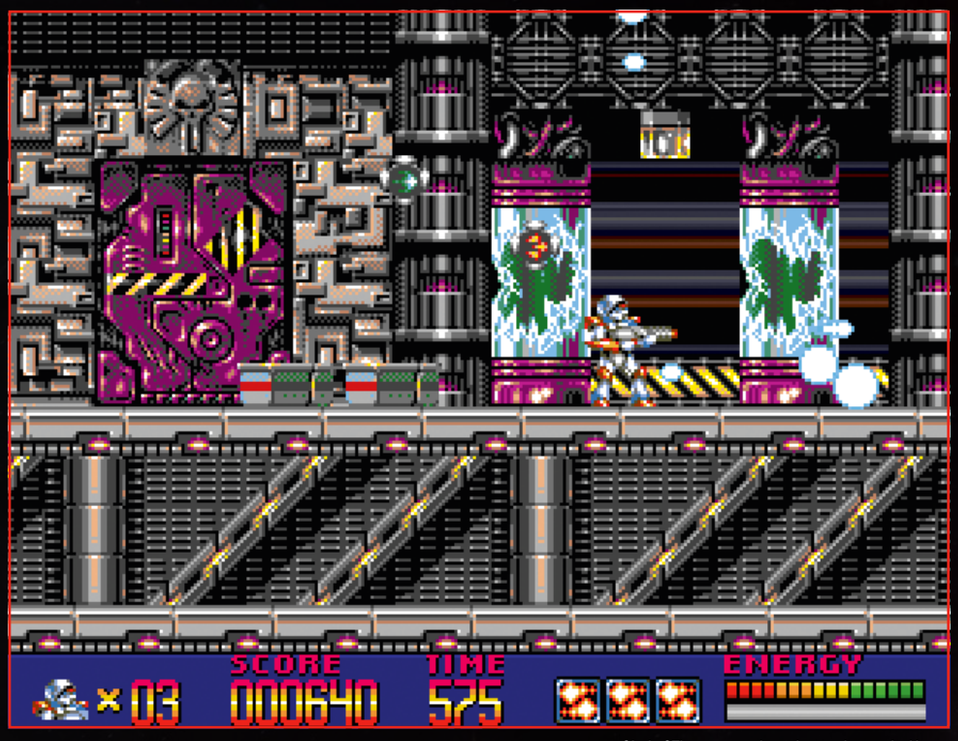
The release of *Turrican II* represented a parting of the ways. Julian left Rainbow Arts to fully join Factor 5 in Cologne, while Manfred returned to his hometown. Both now focused on developing *Turrican* for consoles.

Manfred started work on a NES version of *Turrican*, which was confusingly named *Super Turrican* – the same name as the Super NES version, which was also released in 1993, even though it was a completely different game. Julian explains: "The way the name came about is because everything had to be super. We said, like, 'Why the hell would you name a NES game Super?' But Rainbow Arts or Imagineer, our distribution partner, they insisted on it. We all thought that was stupid."

Unfortunately, *Super Turrican* ended up falling far short of its potential. "It's kind of a sad story in a way," says Julian. "It's a cut-down version of *Turrican* – and really, severely cut down – which isn't Manfred's fault, because the crazy thing was Rainbow Arts was so cheap at the time." Many NES games, like *Super Mario Bros 3*, used memory management controller

» [Amiga] It wouldn't be a videogame without a giant, slow-moving lift.





» [Amiga] These creepy glass tubes can be smashed in *Turrican III*, causing them to spill their gloopy contents.

(MMC) chips to expand the capabilities of the console. But Julian says that Rainbow Arts refused to pay for an MMC chip for *Super Turrican*, meaning it was impossible for Manfred to recreate the full *Turrican* experience. "It's amazing that he got it going at all," says Julian, "if you know how little the stock NES can do."

Meanwhile, Factor 5 had engineered Mega Drive and Super NES development kits. "We used our hardware guru," says Julian, "who was working in the hardware department of the German Secret Service. And he had hardware analysers to basically reverse engineer stuff. So we took a Mega Drive and a SNES and gave them to our hardware guy, and six months' later – POP – out come development kits. And since the statute of limitations has run [out], I can also say we started selling those to other developers: ours were better than the stock Nintendo one, and they were a hell of a lot cheaper!"

> "THE QA FOLKS WERE ABLE TO GET INTO NOOKS AND CRANNIES, AND GOT STUCK EVERYWHERE"
> **JULIAN EGGEBRECHT**

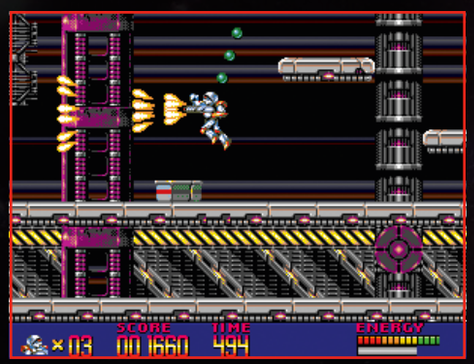
Dev kits in place, Factor 5 set about taking advantage of the Super NES's graphical oomph, with Holger leading development. "*Super Turrican* was always meant to be a 'best of'," says Julian. "We wanted to do a mix of *Turrican* and *Turrican II*, using Mode 7 for a few effects." They designed the game with an eight-megabit cartridge in mind, but in late 1992, they received a bombshell from Rainbow Arts: the publisher would only offer them a four-megabit cart. Julian was outraged: "I mean, it was the year of *Street Fighter II*, where everybody else had moved on to 16 megabits. It was ridiculous." By that point, *Super Turrican* clocked in at around six megabits, and the decision to go with a four-megabit cart meant ditching a bevy of material, which has only recently been reinstated with the *Director's Cut*.

After years of doing ST ports, Thomas Engel finally got the chance to be the lead developer on *Turrican III*, aka *Mega Turrican*. The headline change for this game was the replacement of *Turrican*'s signature plasma beam with a multidirectional grapple, inspired by the whip-swinging in *Super Castlevania IV*. But implementing it without breaking the game proved a nightmare, says Julian: "The QA folks were able to get into nooks and crannies, and got stuck everywhere."

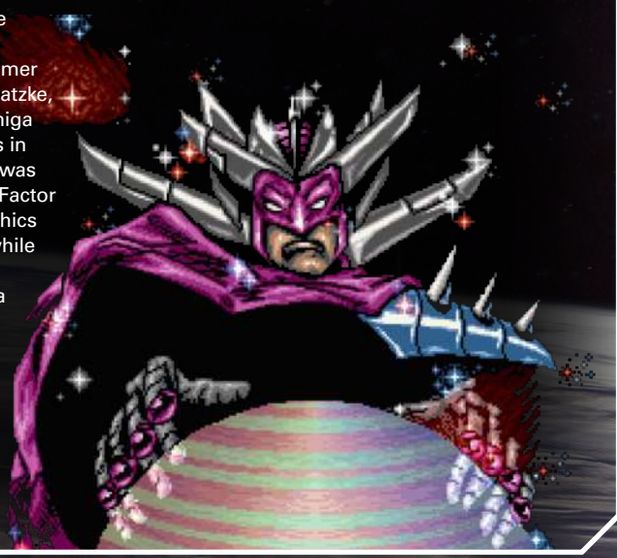
The prototype for *Turrican III* was developed on the Amiga, but Rainbow Arts, alarmed by the decline of Commodore's computer, decided that production should be switched to the Mega Drive. Luckily, the two machines both used a 68000 chip, so porting the prototype was relatively simple. Development on the Super NES and Mega Drive games went on concurrently throughout 1992.

Meanwhile, an Amiga version of *Turrican III* was suddenly put back on the table. Chris Huelsbeck had left Rainbow Arts in 1990 to form Kaiko with programmer Peter Thierolf and graphic artist Frank Matzke, and the studio released the beautiful Amiga shooter *Apidya* in 1992. But the firm was in financial trouble, and Julian notes there was "horrible infighting" among the trio. So Factor 5 brought Frank on board to do the graphics for *Super Turrican* and *Mega Turrican*, while Peter got in touch with Rainbow Arts to ask whether he could program an Amiga version of *Turrican III*. Despite nixing an Amiga release, Rainbow Arts agreed, and Thomas sent across *Mega Turrican* code for Peter to port onto the Amiga.

Mega Turrican was almost complete by the end of 1992, but it wasn't released until 1994 owing to protracted publisher problems.

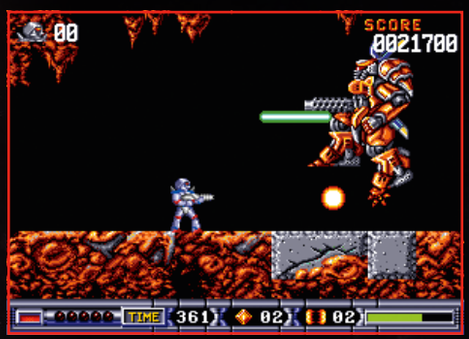


» [Amiga] *Turrican III* introduced a multidirectional grapple that could attach to any surface – which caused all sorts of problems in development, as QA testers regularly got themselves stuck.



"Rainbow Arts couldn't hack it, so at the end of the day we had to find a publisher ourselves," says Julian. "We were talking to Konami, because we did *Contra III* and *Animaniacs* on the Game Boy, and for a while we were also slated to do *Castlevania* on the Genesis. And part of that larger deal was that they would publish *Mega Turrican*." But the Japanese publisher had a problem with one particular level. *Mega Turrican* was mostly a mix between Japanese-style left-to-right shooting and more exploratory gameplay, but the second stage was almost entirely free-roaming, and Konami insisted it should be removed, worried that it wouldn't sit well with Japanese and American sensibilities. Factor 5 took out the level, hiding it behind a code – but even so, the negotiations broke down, and *Mega Turrican* was eventually published by Data East.

Confusingly, even though it was finished after *Mega Turrican*, *Turrican III* on the Amiga actually came out first, in 1993. And because it wasn't part of the contract negotiations with Konami, the cut second level remained intact on the Amiga – although otherwise the games were nigh-on identical. The Amiga game uses the same source code as the Mega Drive version, but because Peter didn't have access to any of the Mega Drive's fancy graphics hardware. "He had to figure out ways and means to actually simulate all of the different effects," says Julian, "and he did a great job." Both games also feature another banging soundtrack from Chris Huelsbeck, marking his first foray into FM music.



» [Amiga] The first boss in *Turrican II* has an obscenely large gun that annoyingly protects its weak spot from being targeted with the plasma beam.

> "RAINBOW ARTS COULDN'T HACK IT, SO AT THE END OF THE DAY WE HAD TO FIND A PUBLISHER OURSELVES"
> **JULIAN EGGEBRECHT**

The final game in the series was *Super Turrican 2* on the SNES, and it marked a change of direction, says Julian. "We said, 'Okay, why don't we go all out?' Why don't we almost completely move away from the freewheeling designs, and actually try to do a very Japanese game throughout?" As such, *Super Turrican 2* is a much more linear affair than previous entries, but it has some truly impressive visual effects, thanks in part to Factor 5 finally bagging a 16-megabit cart.

The focus on Mode 7 effects meant the free-roaming had to be reined in. "Whenever you want to do a lot with Mode 7, then you have to limit your game design to mostly a horizontal design, or only vertical," explains Julian. In addition, the multidirectional grapple was turned into a simpler *Bionic Commando*-style arm, which could "still attach to everything, but it made it easier to handle and much more playable", Julian says. *Super Turrican 2* also saw Chris experimenting with an orchestral soundtrack for the first time.

» [Mega Drive] The Machine is the main antagonist in all of the *Turrican* games except for the first one, in which an AI called MORGUL is the big baddie.

» [SNES] *Super Turrican 2* ditched the exploration for a much more straightforward left-to-right format, but with some utterly sumptuous Mode 7 effects.

But for Factor 5, the lustre of *Turrican* had faded by the time of *Super Turrican 2*'s release in 1995. "We were quite frankly a little bit sick of it," says Julian, "and towards the end of it we had moved on because we were working with Konami on *International Superstar Soccer Deluxe*." To cap it all off, Factor 5's already fractious relationship with Rainbow Arts broke down completely. "They actually did an awful deal with Ocean," says Julian. "And we ran over time, so *Super Turrican 2* took about half a year longer than it was supposed to, so they claimed that we were in breach of contract and wanted to recoup the complete money that they paid to us for development." The heated legal dispute marked a sad and premature end for the *Turrican* series.

But Rainbow Arts was eventually sold to THQ, and when THQ went bust in 2012, Factor 5 was able to acquire the rights to the *Turrican* games. This has culminated in the current re-releases (see 'Upgrading *Turrican*' on page 62'), and potentially an entirely new game (see '*Turrican* Returns?' on the next page). The Machine may have been defeated multiple times, but it always finds a way to come back. ✱

TURRICAN RETURNS?

A NEW GAME COULD BE IN THE OFFING

» [Switch] The success of the incoming compilations will largely decide the fate of a new *Turrican* game.

Julian Eggebrecht says that Factor 5 will be using sales of the *Turrican* re-releases to gauge the interest of fans in a new entry in the series. If they are a success, he has a few ideas on what the new game will be like: "First of all, we're going to base it in terms of gameplay style on *Turrican II*, because the two best *Turricans* in my mind are actually *Turrican II* and *Mega Turrican*. *Super Turrican 2* goes a little bit too far in the Japanese direction, but *Mega Turrican* actually struck a really nice balance there, and *Turrican II* is the pinnacle of the completely freewheeling thing. So we would definitely base it on *Turrican II*, with a hint of *Mega Turrican* in there in the sense that some physics-driven stuff would be really awesome.

"The other thing is, to make the fans happy, what I would truly like to have is an online ability for the community to design their own levels." Julian notes that the problem with many retro revivals is that the games can never quite live up to the memories fans have in their minds, so the ideal solution is to let them craft the game as they see fit. "We're going to deliver something which we think is right," he says, "but then at the end of the day, people can build their own levels."

And although Factor 5 has experimented with 3D versions of *Turrican* before – like with *Tornado* for the GameCube and *Turrican: Cyclone* for the PS3, both of which were cancelled – this time around, the team wants to stick with 2D. "We will definitely do a little bit of pseudo-3D, or do the characters as 3D objects," says Julian. "But mostly, it will definitely be pixel art. I mean, it has to be based on pixel art quite frankly, and you can do such gorgeous pixel art these days. I can relate to all of the fans wanting to play another 2D *Turrican*, and I think that's the right way to go."

30 YEARS OF SONIC THE HEDGEHOG

THE FASTEST HERO IN VIDEOGAMES IS 30 YEARS OLD, AND HE'S SHOWING NO SIGNS OF SLOWING DOWN. WITH SERIES PRODUCER TAKASHI IIZUKA, WE LOOK AT SONIC FROM A VARIETY OF ANGLES TO FIND OUT WHY HIS CAREER HAS BEEN A MARATHON RATHER THAN A SPRINT

WORDS BY **NICK THORPE**

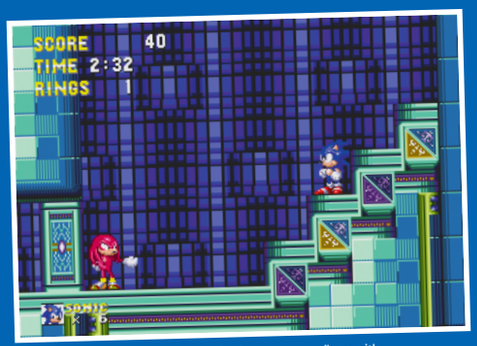
Takashi Iizuka – producer, Sonic Team.

If videogame characters could attend their own award shows, which ones do you think would get the full A-list, red carpet treatment? It's a strange question, but if you indulge us and give it a little thought, you'll probably come to the conclusion that there aren't too many. Pac-Man would definitely be there, probably to collect a lifetime achievement award, and Mario wouldn't be far behind. Lara Croft would be the favourite of the paparazzi, and Pikachu would be there to give some of the most insightful interviews of all. Sonic The Hedgehog would certainly join all of them, too – and he'd almost certainly be the one making the evening news because of some attention-grabbing antics.

Sonic was designed to steal the show from day one. Sega wanted a character to take its business to the next level and allow the Mega Drive to compete against the might of Mario, and that's exactly what it got. In those early days, Sonic's speed ensured that his game was in the spotlight. Sega of America's bold tactic of running mall tours to compare *Sonic The Hedgehog* and *Super Mario World* relied on Sonic's flashy nature, and it worked. When Sega needed to demonstrate the power of the Dreamcast, Sonic's dramatic escape from a rampaging killer whale did the job admirably.

But like many celebrities, Sonic has had his trials and tribulations over the years. Fans have been determined to stick by him, sometimes to the bafflement of those watching from the sidelines. In part, that's because the dark days of 2006 feel like half a lifetime ago – and as far as Sonic's concerned, they are – but it's also because *Sonic* games are unique. When you're in full flow, guiding Sonic as he leaps over obstacles and spins through enemies at a pace that you never thought possible at the start of the game, the sense of mastery you feel is second to none. It feels almost akin to a videogaming form of parkour, and fans live for those moments. When Sonic is at his best, he delivers exhilarating action like no other character can.

Today, Takashi Iizuka arguably knows Sonic better than anybody else, having been involved with the speedy superstar for the vast majority of the series to date. He started his career as a designer on *Sonic 3* and *Sonic & Knuckles*, moved into a directorial role for the popular *Sonic Adventure* games, and today acts as the producer of the series and head of Sonic Team. We've asked him to explain a number of aspects of how he and his team approach the *Sonic* series, in order to uncover the philosophies and ideas that have shaped such an enduring part of videogaming – and indeed, pop culture in general. ▶



» [Mega Drive] Storytelling in early *Sonic* games was silent, with character animations wholly responsible for conveying personality.

» Early art for Sonic shows him as rather carefree, brushing his hands off here as if to show his heroism is no big deal.

» [Xbox 360] One area that Sonic's character isn't well-versed in is romance – though it has been attempted.

INIMITABLE IMAGE

SONIC'S CHARACTER DESIGN AND PERSONALITY HAVE LONG BEEN PART OF HIS APPEAL – HERE'S HOW SEGA KEEPS HIS IMAGE FRESH

Sonic is a character that is rarely caught standing still, both in a literal and conceptual sense. That's always been the case, too – just check out the original story comic that ran in Japan's *Mega Drive Fan* magazine, which is full of oddball concepts from the game's development period. Sonic comes across very differently there, sporting some wild-looking fangs and acting as the frontman of a rock band, but it makes a lot of sense if you still think of Sonic as the "hedgehog with attitude" that he was always said to be. Really, from the moment that he turned to you with a scowl and started tapping his foot if you left the controller alone, that's what he always was.

But we've had different interpretations of just what Sonic should be over the years. Recent games have seen him throwing out comical quips like a Saturday morning cartoon character, and his movie personality was excitable and childlike. Elsewhere, he has taken a different path – the 2006 *Sonic The Hedgehog* game went for a serious approach, while *Sonic The Comic* portrays Sonic as a hero whose arrogance and condescension sometimes cause him problems.

So with that in mind, how does the veteran Sonic Team head Takashi Iizuka see Sonic's personality today? "Sonic is a playful hedgehog who never shies away from an adventure. He's focused on justice and doing what's right by his pals, no matter where that may lead him," he replies. "His quick wit takes him far but can sometimes get caught up in a speedy whirlwind – that's where his trusted friends come in, bringing him back down to earth and keeping him grounded."

The role of Sonic's friends has changed over the years, with the likes of Tails, Knuckles and Shadow taking just as much gameplay prominence as story importance in the early days of the move into 3D. In recent times they've been present but only in secondary story roles. In the same way, the kind of stories that Sonic features in have also changed, from tales of destruction and calamity in the likes of *Sonic The Hedgehog* (2006) and *Sonic Forces* to more light-hearted, comedic stories like *Sonic Colours*. You should probably expect to see more such changes in the future, too. "Sonic is an extremely versatile character, in that he can be adapted into many different forms when telling a story, as you mentioned. Experimenting with different approaches has been an exciting process, and we plan on continuing that so long as it remains accessible to our team," Iizuka confirms.

Staying relevant for 30 years has its challenges, and for all of the various interpretations of his personality, Sonic has had just as many distinctive visual styles to keep up with the trends. "Consumers have always taken a liking to Sonic's playful and colourful appearance, and we always try to keep his appearance rather consistent for the sake of ensuring his fans can recognise him no matter what medium he appears in," explains Iizuka. "His vibrant colour and mischievous expressions resonated with kids and adults alike who have now followed Sonic through the years, and slight changes to his physical appearance has kept audiences on their toes as they watch Sonic transition into different forms throughout his life."

Those changes were made obvious even to the less observant in 2011, when *Sonic Generations* brought the modern Sonic and his 1991 counterpart together for an adventure through time. "Initially, we thought bringing the 'classic' Sonic into the fold was just going to be a 20th anniversary project, but it was met with such positive responses from fans that we knew we would keep him around," Iizuka reveals. "In fact, we have released *Sonic Mania* focused on the 'classic' Sonic in 2017. The 'classic' Sonic is a popular iteration who will hopefully be a part of the blue blur's future."

As Sonic has grown into a multi-generational fan favourite, players who grew up in different eras have formed their own attachments – for many *Sonic The Hedgehog 2* is the ultimate touchstone, but for younger fans it can be *Sonic Adventure 2*, *Sonic Generations* or even *Sonic Mania*. With the focus on classic Sonic and spin-off projects such as *Sonic Boom* in recent years, some fans have begun to question whether Sega sees different iterations of Sonic almost as distinctive characters with their own audiences, rather than a single character. "Sonic obviously has a long-lasting appeal for fans, regardless of his form, but he's the same lovable character at the end of the day," says Iizuka, refuting that notion. "The nostalgic factor allows us to translate his unique personality into a number of different mediums, where he stays entirely relatable and recognisable. It's not really up to us to dictate how our audiences interpret Sonic, but instead it's our job to ensure they see him take on new forms that further perpetuate his spunky attitude that fans know and love." ▶

ERINACEIDAE EVOLUTION

HOW SONIC'S LOOK HAS DEVELOPED OVER THE YEARS

CLASSIC SONIC

■ Naoto Oshima's character concept was brilliantly illustrated by Akira Watanabe, and informed the basic expectation of Sonic's appearance in Japan right up until *Sonic Adventure* came along.

SONIC BOOM

■ This rendition isn't so bad in hindsight, especially compared to the top-heavy treatment Knuckles got in *Sonic Boom*. But the scarf is an odd stylistic flourish, and why did he tape up his shoes?

SONIC ADVENTURE SONIC

■ Yuji Uekawa's visual refresh gave Sonic longer legs, longer spikes and a smaller belly, as well as green eyes. Twisted, dynamic poses mark the 2D illustrations in the early part of this era too.

MODERN SONIC

■ While *Sonic Adventure* was mostly represented with 2D artwork, Sega has subtly moved away from the 3D artwork used in that era to give Sonic the familiar look that he has today in his 3D appearances.

MOVIE SONIC

■ Paramount redesigned its movie model, criticised for its weird humanoid legs and creepy eyes. The end result, aided by Tyson Hesse, is more furry than spiky but worth the $5 million budget increase.

Courtesy Paramount Pictures and Sega Of America.

WESTERN SONIC

■ Greg Martin's take on Sonic, adopted by other Western artists such as Duncan Gutteridge, is often known by fans as 'Mohawk Sonic' as he often appears to have just a single row of spikes.

GOTTA GO FAST

EVERY SUPERHERO NEEDS THEIR DEFINING SUPERPOWER, AND SONIC'S IS SPEED – BUT HOW DOES SEGA KEEP HIM RUNNING OUT OF CONTROL?

What would Sonic be without his speed? Roadkill, probably – after all, he does have a habit of being chased by trucks, whales and other large things that could very easily crush him. But in gaming terms, Sonic's speed is both a blessing and a curse – a spectacular superpower that makes the games potentially unfriendly to newcomers, as hazards hurtle along at a pace that can be tricky to deal with.

So what's it like, designing games for a character whose defining power is his extraordinary speed? "There are a lot of benefits and challenges to keeping Sonic 'up to speed' per se," says Iizuka. "In terms of the challenges, it motivates us to always push the envelope on technology. In fact, that's how Sonic was created! The original creator Yuji Naka was a videogame programmer developing an algorithm that allowed an object to move smoothly on a curve. With the idea of a ball in mind, he partnered with artist Naoto Ohshima to come up with a hedgehog character, as the animals ball up as part of their nature." Of course, that doesn't quite match up with the rather relaxed pace at which most hedgehogs move, and that's where Iizuka feels the team faces adversity. "While hedgehogs aren't particularly fast, that's where we were challenged to think outside of the box and use some creative freedoms," he says. "In terms of the benefits, the theme of speed has allowed us to explore a variety of genres such as platformers, racing games, RPGs and more. It's such a versatile theme because it plays into Sonic's key characteristic of perseverance, and keeps the storyline going as he races toward his next objective."

» [PS3] The green lock-on reticule here shows Sonic is ready to home in on a target, letting him attack accurately at speed.

» [Mega Drive] Speed is a necessity to clear some obstacles – if Sonic's going too slow, he'll just fall off here.

What Sonic's speed has meant to the game design has evolved over the years. In the early days, going fast was very much a privilege rather than a right – indeed, many fans are surprised by the slow pace of stages such as Marble Zone in the original game. "When thinking about the stage design for the entire game, we want to make sure we aren't just repeating the same fun over and over, but that each stage is going to have something unique about it," says Iizuka, before highlighting how tedious the games could become. "If we just had Sonic running fast through all the levels the gameplay would be too simple, so we design things to balance out that exhilaration of high-speed running with tense moments of action platforming," he says. In the very first game, you had to earn the more spectacular moments after leaving Green Hill Zone.

"Moving through a 3D space at high speed has been a challenge since we first did it in *Sonic Adventure* and is something the team has been refining as an experience since then," Iizuka continues. Indeed, if Sonic's mechanics went largely unchanged then the precision demanded of players would likely have hampered their speed, as they tried to line up to strike enemies. "A lot of work is put into the dynamic balancing and adjusting of handling

» [PC] Chase sequences are a common feature of *Sonic* games that highlight the hero's high speed.

» [Game Gear] At high speeds, Sonic can actually skim across water by running or bouncing.

at high speed, including camera work that all needs to be managed at super high speeds, and not to mention the fundamental level design that needs to guide the player through a fun experience even at maximum speeds," says Iizuka, who also points out the new mechanics added to mitigate the issue. "All the iconic features such as the homing attack and grinding were actions born out of this need to design for a fun experience at high speed."

Over the last 15 years in particular, the emphasis on how to represent Sonic's speed has shifted. "In the more recent games, we have included a boost mechanic and added stages focused on high speed to amplify the speed, but if you looked at the balance in comparison to the older games, the current games probably have more action platforming," says Iizuka. In games like *Sonic Unleashed* and *Sonic Forces*, it can feel as though anything less than top speed is wrong. But at the other end of things, *Sonic Lost World* raised eyebrows by including a dedicated run button. It seems as though the team keeps an open mind as to the best approach, too. "Sonic's speed capabilities are uniquely designed for each game, and vary depending on the game's objectives, but we do always try to take the community's feedback on fan-favourite features into account during the design process," says Iizuka.

» [PC] *Sonic Lost World* is an unusual entry in the series because players have access to a dedicated run button.

Some stages and games are particularly beloved by true speed demons – Chemical Plant Zone's enormous slopes and boosters allow for Sonic to hit his maximum speed, while *Sonic Advance 2* is particularly renowned for how fast you go through its many loops and jumps. Which games would Iizuka recommend to thrill-seeking fans? "Some of the best stages to hit top speeds are featured in *Sonic Unleashed* and *Sonic Mania*," he replies. "Moreover, we have achieved the fastest speed in *Sonic Forces*. In addition, we designed the game with seven special stages that unlock Super Sonic, and as players collect the seven Chaos Emeralds, they'll be able to move the stages at lightning speed." ▶

» [PC] The boost mechanic is vital to modern games, as it allows Sonic to hit his top speed near instantly.

BROKEN SPEEDOMETER

JUST HOW FAST IS SONIC, REALLY?

It's easy to assume, just from his name, that Sonic The Hedgehog is able to run at least as fast as the speed of sound. But is there a definitive answer as to his maximum speed? The short answer is no. The longer answer is that we have some measurements from official sources, but they do all seem to contradict each other.

Sonic has always been described as being capable of supersonic speeds, but that hasn't always been borne out by what we've seen in the games. For example, *Sonic Chaos* features one of the earliest speed measurements in the series, and that counter tops out at 999km/h – but with the speed of sound being around 1,235km/h, that's a subsonic speed. *Sonic Unleashed* throws out much higher numbers for its speed measurement, but doesn't assign units to them, making them rather useless for comparison to anything except other speed measurements from the same game.

Things get further complicated by other claims. The description of the Light Speed Shoes in *Sonic Adventure* tells us that Sonic can move at the speed of light, and the manual of *Sonic Adventure DX: Director's Cut* describes Sonic as hypersonic. That would put his speed at a minimum of Mach 5, or 3,806mp/h. But does that describe him when he's got his speed shoes equipped? How about when he gets all the Chaos Emeralds and transforms into Super Sonic? We already know that Super Sonic is capable of flying through space, and presumably the lack of resistance there would only make him capable of higher speeds.

BUILT FOR SPEED

SPEED IS ONLY WORTHWHILE IF YOU HAVE SOMEWHERE TO GO. HOW DOES SEGA GO ABOUT BUILDING THE ENVIRONMENTS THAT SONIC INHABITS?

When it comes to creating levels, Sonic can be a tricky character to design for. Exploration is often a key part of the platform game genre, and the 16-bit *Sonic* games in particular are known for having some fairly large, sprawling stages. But with Sonic's sense of speed in mind, slowing down and checking out every route is something that many players won't be inclined to do – some might even say it goes against the point of the game. This has been a design conundrum since the very beginning of the series, so how are those things reconciled?

"Level design for 2D *Sonic* games requires application of a core design philosophy – do not create any situation where 'you cannot proceed if you make a mistake'. It sounds obvious as a fundamental rule, but it is also one of the factors that causes stress when thinking about creating the gameplay experience," explains Iizuka, going back to the early days of the series. "2D *Sonic* games are not about carefully moving through the world.

» [Mega Drive] Boss battles can add variety, such as the puzzle element of figuring out how to damage this boss.

We want people to run through at high speed and have a fun time, so the whole 'you cannot progress if you make a mistake' philosophy was taken to heart and level design was approached so that 'even if you fail, there is a different path forward.'" Indeed, often the kind of exploration you do in a *Sonic* game is accidental – you'll be aiming for bonuses and an easy ride in the stage's upper reaches, only to fall and discover an alternative route. "That's why we created such a complicated level design with upper and lower routes, much more complicated than many other titles," Iizuka confirms.

That philosophy held well through the Mega Drive years, and for a long time to come in handheld games, but in the late-Nineties the team faced the challenge of creating 3D environments that retained a similar feeling. "This was an interesting process, and one that took a lot of hard work from our Sega team," says Iizuka. "Some of the challenges we encountered when creating a stage to feel like a *Sonic* stage in 3D was camera work. For 2D *Sonic* games you will be able to get to the goal by progressing to the right far enough, but for 3D *Sonic* titles it was possible to just get lost walking around in any direction, so a lot of that exhilaration wasn't there," he recalls. The solution was to use the tools available to nudge the player into following their own instincts, as Iizuka explains. "It was in that environment where the new camera system was born, where even if the road had twists and turns to the right or to the left, it would move to show you the path forward so you would want to continue moving forward into what the camera was showing you, and that allowed us to create the first 3D action title *Sonic Adventure*."

No matter which era of the *Sonic* series you look at, there is a certain expectation of the kinds of environments that should appear, with the early iconography of checkerboard patterns and a progression from natural environments to urban and mechanical ones as the game

» [Dreamcast] Smart camera work helps players navigate open 3D areas like Sky Deck.

HEDGEHOG HEAVEN VS

HEAVEN MOMENT

REEL GOOD TIME

SONIC THE HEDGEHOG 2

■ The slot reels in the background of Casino Night Zone could so easily have just been a bit of background detail, but the fact that you could use them to gamble for more rings really added something to the stage – as did the fact that you had to play pinball with Sonic to do so.

HEAVEN MOMENT

FALSE FINISH

SONIC GENERATIONS

■ Just as in *Sonic The Hedgehog* (2006), Crisis City Act 1 takes place during an ongoing disaster. Right as you think you've escaped the apocalyptic city, the traditional end post gets swept up by a tornado and flies away, forcing you to push just a little further through the devastation to finish.

HEAVEN MOMENT

BURNING BRIDGE

SONIC MANIA

■ When you first try to cross a bridge in Green Hill Zone with the fire shield, it will instead burn and collapse beneath you. It's a special moment that not only opens up a new route, but shows that the development team can conjure up new tricks from the raw material of the classic games.

» [Dreamcast] Grind rails keep you moving in the right direction, and add style points to boot.

» [Wii] In more modern games like *Sonic Colours*, stages often transition between 2D and 3D game styles.

» [PC] Classic stage archetypes have a long history, with this casino stage in *Sonic Forces* referencing *Sonic 2*

» [PC] A big challenge when designing for multiple characters is accounting for all of their unique abilities.

progresses. "Fans that have been following *Sonic The Hedgehog* since the early stages of the series feel connected to these early environments, including the early island/forest stages, casino/pinball stages and underwater stages," says Iizuka. "However, the new updates that we've made to the *Sonic The Hedgehog* series seem to be well-received by newcomers and veterans of the Sonic series, and for that, we are so pleased!" Indeed, while some games like *Sonic Lost World* lean heavily on the old abstract look, *Sonic Unleashed* took things in a different direction with realistic environments that many fans have come to love.

Another area in which stage design philosophy has had to shift over the years is in the creation of boss battles. "We made boss battles a different way to play from the other running stages, and felt it was important to deliver content where the player would get a feeling of satisfaction upon completion," says Iizuka. "For 2D *Sonic* titles that came at the end of every stage, and for 3D *Sonic* titles boss battles were used to bring excitement to the story points," he continues – explaining why such battles are less frequent in the later games. "To get that feeling of satisfaction, balance was most important. If the battle was too easy it wouldn't be satisfying, but it also couldn't be too difficult, or things would just be frustrating, so we were always trying to make it the right balance of difficulty."

Making that judgement about difficulty is now a more complex process, too. "In the past we would usually just play as a team to get input, or get the opinions from other co-workers, but if we wanted to get a better read on the difficulty, we would work with external research companies," explains Iizuka. "But today we run large playtests and get responses to questions like 'where did you make a mistake?' and 'what was stressful about that?' and turn it all into data to analyse and better inform us on how we can better balance the difficulty of the experience." ▶

HEDGEHOG HELL

INSPIRED AND INFURIATING LEVEL DESIGN MOMENTS FROM SONIC'S HISTORY

HELL MOMENT

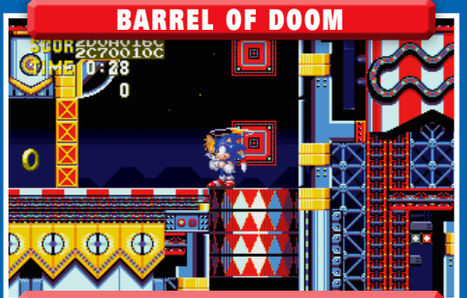
DEATH PIT

SONIC THE HEDGEHOG 2

■ This nasty little area represents one of the few places in a *Sonic* game where you can get truly stuck, with no way out except death, as you can't jump high enough to get out. Pity those who fall down here as Super Sonic – the wait for your rings to run out feels endless.

HELL MOMENT

BARREL OF DOOM



SONIC THE HEDGEHOG 3

■ You have to press up and down on the d-pad to move this barrel. That isn't explained anywhere in the game or manual, and it reacts to jumping enough to trick you into thinking that's how it works. It isn't, and a whole generation of kids fell at this particularly ill-considered hurdle.

HELL MOMENT

FINAL HAUNT HERO MISSION

SHADOW THE HEDGEHOG

■ All you have to do here is reach the goal ring – but if you use Shadow's Hero power, Chaos Control, you can inadvertently activate switches for the Dark mission and cause the goal ring to disappear. Finishing the stage requires you to backtrack and turn them all off again.

TURBO TUNES

THE FASTEST HERO IN VIDEOGAMES NEEDS THE ULTIMATE RUNNING PLAYLIST, AND WITH CAREFUL COMPOSITION AND CELEBRITY CAMEOS, HE HAS IT

The audio of the *Sonic* series has been consistently excellent over the last 30 years, to the point that even those games that are less celebrated in their totality are praised for their music. The fact that we can pick out favourite tracks from *Shadow The Hedgehog* and *Sonic Unleashed* as easily as we can *Sonic 3* or *Sonic Colours* has to say something (and no, it's not "you're a bunch of Sonic nerds", you sarcastic lot). Much of the groundwork for this excellence can be traced back to an unusual approach to videogame music, by the standards of the early Nineties.

In order to give its big game a sound that would resonate with the wider public, Sega arranged for *Sonic The Hedgehog*'s music to be composed by Masato Nakamura, the bassist for the wildly popular Japanese band Dreams Come True. "The music in early *Sonic The Hedgehog* games established a signature sound for the franchise, especially with fan-favourite levels like the Green Hill Zone," says Iizuka, explaining the precedent that Nakamura's work set for the series. The bassist would also contribute the soundtrack for the sequel, but left the series after that. "After the success of *Sonic The Hedgehog 1* and *2*, we maintained the arcade-style sound for *Sonic 3* and *Sonic & Knuckles* for Mega Drive," says Iizuka. The theme of input from major recording artists continued too, as the third game features major contributions from members of Michael Jackson's song writing team – and if rumours are to be believed, even the controversial pop star himself.

» [Mega Drive] Our doctor told us that you can't hear images. We replied by showing them this, and they relented.

» [Mega-CD] Want to start a fight between Sonic fans? Bring up the topic of *Sonic CD*'s region-exclusive soundtracks.

When the team was finally freed from synthesiser chips and their limitations, the series shifted in a very different musical direction. "Composer Jun Senoue was the key influencer behind the franchise's transition into rock soundtracks. As a musician, he was always drawn to rock and roll, and he saw *Sonic Adventure* as the perfect vehicle to explore that style of music in the games," explains Iizuka. "It was the very first 3D game for the franchise, which brought dialogue to the characters, and rock music complimented the storyline and the signature rebellious attitude of the characters." Despite being a big stylistic change, it's something that Iizuka sees as having always been in the spirit of the series. "While the music has evolved from classic arcade-style piano synth to the rock and roll sounds of Crush 40 and beyond, the music has always been upbeat and high energy, and that's consistent throughout the franchise."

While the Sega sound team has a much more active role in composing the music for the series than it did in the early years, *Sonic* games continue to attract well known musical names across a diverse range of genres. The rapper Akon covered the Dreams Come True song *Sweet Sweet Sweet* for the ending of *Sonic The Hedgehog* (2006), Doug Robb of the rock band Hoobastank sang the theme song for *Sonic Forces*, and chiptune artist Toriena worked on a track for *Team Sonic Racing*. But Iizuka won't be drawn on who the team might like to collaborate with in the future. "Sega welcomes all different types of music composers, producers, and artists, and believes that no specific artist genre fits the mould of Sonic The Hedgehog, since he is for anyone and everyone," he says. "We're always looking to expand our growing list of

» [Mega Drive] Songwriter Brad Buxer drew Ice Cap Zone's theme from *Hard Times*, a song by his band The Jetzons.

collaborative artists for new *Sonic* music our fans will love – and we look forward to whatever artist we work with next!"

No matter who is composing for the games, they often have the tricky job of writing music for a stage without being able to fully experience it. "Before we begin composing for a stage, we collect materials to give an image or impression to set the scene. At that time there may be actual stages to play, but usually that is not the case, so we get concept artwork or scenarios that can visually represent the stage," says Iizuka. "Sometimes we don't even have that and still need to start composing, so we get a written document outlining something unique to the stage and get to work from there."

But while the stage themes are excellent and our ears will always detect the sound of Green Hill Zone's distinctive opening, it's most often the vocal themes that really stick in the minds of the fans – whether that's *Sonic R*'s wonderfully Nineties tunes or the raps that accompany Knuckles stages in *Sonic Adventure 2*. Indeed, Iizuka identifies a pair of vocal themes as the biggest fan favourites. "Over the years, there have been a couple of songs that have stood out to our fanbase, more than others, including the theme song of *Sonic Adventure Open Your Heart* and the theme song of *Sonic Adventure 2 Live & Learn*." Jun Senoue can regularly be found performing these songs at events like Sonic Adventure Music Experience and Summer Of Sonic – and right there with him, there will be a crowd of lively fans, belting out the lyrics with everything their lungs can muster. ▶

» [Dreamcast] Memetic mutations ahoy – just say "up and down and all around" to any Sonic fan and you'll evoke memories of this stage.

» [PS2] Spin-offs like *Sonic Riders* often have music that will get your blood pumping too, regardless of their other qualities.

» [PS4] The joy of revisiting old stages in newer games is hearing how the sound team manages to refresh excellent tracks like *Bingo Highway*.

TOP TRACKS

THE SONIC SOUNDTRACK ALBUMS THAT EVERY SONIC FAN SHOULD OWN

SONIC R

1998

Some people believe this is cringeworthy, but they are massively wrong. These vocal tracks will appeal to anyone who can truly feel the sunshine – which should be all of you.

CUTS UNLEASHED: SA2 VOCAL COLLECTION

2001

There aren't many tracks on this album, but *Live & Learn*, *Escape From The City* and *EGGMAN* are here – and those are the sorts of favourites that you'll hear at any gathering of Sonic fans.

SONIC THE HEDGEHOG 1 & 2 SOUNDTRACK

2011

This album contains the classic tracks from the first two *Sonic* games – but the real reason to get it is for Masato Nakamura's original demo tracks, which had never previously been released.

SONIC GENERATIONS ORIGINAL SOUNDTRACK: BLUE BLUR

2011

Take a selection of the greatest stages of the series' first 20 years, get the excellent music from them and then remix the lot. How could it fail? It didn't, and all the 3DS tracks are included too.

SONIC MANIA

2017

Apart from having been released as a lovely vinyl LP, *Sonic Mania*'s soundtrack contains the game's excellent original compositions – the Studiopolis Zone track in particular is excellent.

» Tiger Electronics made quite a few *Sonic* products, and even bagged the licence for a Game.com handheld game.

Courtesy Paramount Pictures and Sega Of America.

» The *Sonic* movie was a big success for Paramount and Sega, so a sequel is currently scheduled for 2022.

» *Sonic The Comic* is particularly beloved by many UK fans, despite (or perhaps because of) Sonic's tendency to be a jerk.

RUNNING THE GAMUT

WITH PLENTY OF TOYS, TV SHOWS, A MOVIE AND MORE, SONIC'S WORLD HAS ALWAYS STRETCHED FAR BEYOND THE BOUNDARIES OF VIDEOGAMES ALONE

If it feels like Sonic currently enjoys a higher profile than he has for quite some time, you're probably right about that. The *Sonic The Hedgehog* movie starring Ben Schwartz, Jim Carrey and James Marsden became the highest grossing videogame adaptation of all time in North America, and a sequel is in the works. IDW Publishing launched a new comic series in 2018, and there has been plenty of new merchandise to coincide with the arrival of Sonic's 30th anniversary. "We're never going to shy away from a project just because it falls outside of videogames! In recent years, we've really been focusing on restoring fans' trust in our products and continuing to grow and position our brand for the future, so the possibilities are endless," says Iizuka.

Of course, Sonic has been here before. The enormous success of the early *Sonic* games quickly catapulted Sega's hero to superstardom, to the point that it's claimed that during the early Nineties, Sonic was recognised by more American children than Mickey Mouse. That kind of fame naturally caught the interest of people outside the world of videogames. In fact, two TV cartoons ran at the same time – the comedic *Adventures Of Sonic The Hedgehog* and the darker *Sonic The Hedgehog*, the latter of which provided the basis for a comic series by Archie Comics that ran from 1993-2017. UK-based readers instead had Fleetway's *Sonic The Comic* from 1993-2002, and its characters and stories have been continued by dedicated online fans since 2003. These adaptations weren't always tremendously faithful to the source material, but with the limitations of how the classic *Sonic* games told their stories, the TV shows and comics were essential for fans who wanted to dive deeper into Sonic's world. The way the games work has changed over the last 30 years, but that desire for a richer world hasn't gone away.

Another thing that has evolved over the years is Sonic's relationship with the audience, as Iizuka points out. "The biggest difference between Sonic's initial success and his fame today is how many memories people have with his character. We see parents passing on their love for the franchise to their children nowadays, sharing memories of their favourite game or iteration of the blue blur. We didn't see that when Sonic first came to life, of course, because he was so new to the space," he explains. In the same way that baby boomer parents would show their children Looney Tunes and Disney animations, the fond memories of millennial

GET ANIMATED

SONIC HAS BEEN IN QUITE A FEW ANIMATED SHOWS NOW –

ADVENTURES OF SONIC THE HEDGEHOG
1993

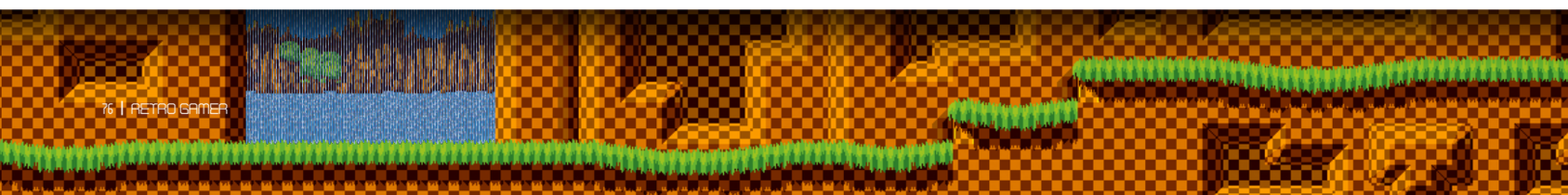
Designed for first-run syndication, Sonic and Tails take on Robotnik in all sorts of one-shot adventures that are heavy on the comedy. Jaleel White's Sonic is fondly remembered, but it's Long John Baldry's portrayal of Robotnik that has generated the many memes that fans love today. There's plenty of nostalgic value here, but like most early adaptations, it's not close to the games.

SONIC THE HEDGEHOG
1993

In this cartoon, Sonic is part of a group of freedom fighters in a dystopian world ruled by Robotnik – who is surprisingly sinister for being voiced by Jim Cummings, best known for voicing Winnie The Pooh. Some fans loved the ongoing story, but ABC cancelled the show on an unresolved cliffhanger after two seasons, leaving the characters to live on in Archie's comic series.

SONIC THE HEDGEHOG (OVA)
1996

This two-part video release was Sonic's first Japanese animated outing, and was released as *Sonic The Hedgehog: The Movie* in English-speaking markets in 1999. The story is not particularly complex, with Sonic being lured into a battle with Metal Sonic, but it's definitely one of the most visually appealing *Sonic* animations thanks to some great action sequences.



parents have ensured that Sonic didn't simply become a fad that faded away. "Now we really get to see what our audience has chosen to carry with them for years and how they connect with Sonic on a multi-decade level. That really fuels a lot of our decisions for the brand, since we're always trying to listen to what fans want and adjust our ventures accordingly."

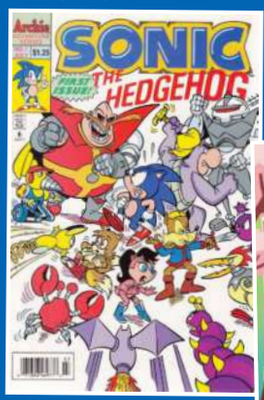
You can see the results of some of those decisions in the kinds of merchandise available. Classic Sonic is sighted just as often as his modern counterpart these days, and the 16-bit iconography of the series is still in heavy use. Past products have even returned to the market, as with Hasbro's reissue of the *Sonic The Hedgehog 3* LCD game, and this is the kind of thing that Iizuka highlights as being popular. "The retro products have always been highly requested by our fanbase, so we're always open to it!"

While Sega is part of a large group of companies that includes Sega Toys and the CG animation studio Marza Animation Planet, working outside videogames inevitably means working with other companies. Sometimes those collaborations will produce unfortunate results, as happened with the widely criticised initial trailer for the *Sonic The Hedgehog* movie in 2019. "It was clear to both our team at Sega and the folks at Paramount that we needed to reapproach Sonic's design after the initial trailer was published. Because of that, they were open to listening to the fan base, which allowed us to provide our expertise as well," says Iizuka. But despite being very protective of how Sonic is portrayed, the company prefers to trust its partners rather than retaining the option for direct intervention. "We never stepped in to control the process, because Paramount was and is the expert on film making, so there was no world in which we intended to take over creative control."

Plans are already in the works for Sonic's next big starring role too, as he's heading to Netflix in 2022 for his sixth TV series. "*Sonic Prime* is a 24-episode long high-octane adventure that draws upon the keystones of the brand. In the series, the fate of a strange new multiverse rests in Sonic's hands. It's more than a race to save the universe, it's a journey of self-discovery and redemption," explains Iizuka. We're still waiting for our first look at the series, but we know that WildBrain's Vancouver studio will animate *Sonic Prime*, while Man Of Action Entertainment will be bringing their experience from *Ben 10* and *Big Hero 6* to the show as showrunners and executive producers. With both this show and the new movie, you'll be seeing a lot of Sonic well past the birthday celebrations, and that just underscores what Iizuka has said – as a character, Sonic is now a multi-generational favourite. No matter how you choose to enjoy his adventures, he's a part of the pop culture establishment now, and we expect to see him running for a long time to come. *

» First 4 Figures is a frequent Sonic licensee, producing high end figures for the collector's market.

» This head-only Sonic plush seems rather more like something Eggman would buy, don't you think?



» The 30th anniversary is being celebrated in various ways, including via IDW's comic series.

» Archie Comics was one of the earliest companies to expand the *Sonic* universe, naturally via comics.

» Sonic has also done a lap or two of the tabletop gaming circuit with *Sonic Battle Racers* and *Sonic Boom Monopoly*.

WE SEPARATE THE MARATHON WORTHY FROM THOSE TO FAST FORWARD

SONIC UNDERGROUND
1999

Sonic and his siblings Sonia and Manic are out to rescue their kidnapped mother, Aleena – the queen of Mobius. Oh, and they're a band too, and their instruments turn into weapons. The animation here is never of particularly high-quality and the concept is a mess, especially given its total lack of relation to *Sonic Adventure* which was the current game at the time.

SONIC X
2003

This Japanese production has Sonic living on Earth with a wealthy new human friend Chris. Despite this, it uses the existing game cast rather than introducing lots of new characters, and even adapts the events of *Sonic Adventure 2* Those who prefer their cartoons faithful to the games enjoy it, but the heavy-handed American localisation has often come in for criticism.

SONIC BOOM
2014

This CG animated cartoon is a light-hearted comedy with wacky plots such as Eggman becoming Sonic's housemate, and Amy holding a sensitivity seminar for Sonic. Once you get past the controversial character designs, the show is actually a pretty good watch for the whole family, as a good amount of humour has been thrown in for older fans and the parents of young ones.

A TRIBUTE TO

TREASURE

GUNSTAR HEROES SAW TREASURE HIT THE GROUND RUNNING AND THE TALENTED JAPANESE DEVELOPER FOLLOWED IT WITH A STRING OF GAMES THAT WERE AS FUN AS THEY WERE TECHNICALLY ACCOMPLISHED. TREASURE'S PRESIDENT, MASATO MAEGAWA TAKES THIS OPPORTUNITY TO HIGHLIGHT THE STUDIO'S GREATEST AND MOST INTERESTING GAMES

WORDS BY NICK THORPE & DARRAN JONES
INTERVIEW BY JONTI DAVIES

The Mega Drive had no shortage of exciting development teams during the late-Eighties and early-Nineties, but in our opinion, few studios could match the technical brilliance and sheer consistency of Treasure. The studio was started by Masato Maegawa on 19 June 1992 and delivered one hell of a calling card with *Gunstar Heroes* – an outrageously good run-and-gun game that was as inventive as it was technically polished.

Treasure's proficiency on the 16-bit system makes a lot more sense when you realise that Maegawa and his team, which numbered some 18 staff by late 1993, had all previously worked at Konami, and many were accomplished programmers who had worked on such arcade hits as *Qix* and *The Simpsons* as well as SNES classics like *Axelay* and *Super Castlevania IV.* After spending four years at Konami Maegawa revealed to Gamefan in its eleventh issue that "I just couldn't stand making more sequels, but in order to drive sales sequels must always be made".

There was no interest from Konami when Maegawa and his team pitched *Gunstar Heroes*, so he did the next logical thing and left the company to form his own so that he and his fellow programmers could make the games they wanted to play. A partnership was eventually formed with Sega and *Gunstar Heroes* was released to great acclaim – not bad for a game completed in roughly ten months by just seven people. After selling over 70,000 copies in Japan and over 200,000 overseas it could have been easy for Maegawa and his team to simply make a follow-up, but the studio stayed true to its word and continued to create brand-new games. In fact, it wouldn't be until 2004 that Treasure would make a sequel to one of its own games (the Saturn's *Guardian Heroes*) and a sequel to *Gunstar Heroes* arrived the following year.

While Treasure would stay exclusive to Sega consoles for several years, 1997 saw the developer begin to branch out to other machines, although interestingly, many of Treasure's games like *Mischief Makers* (N64), *Guardian Heroes* (Saturn), and *Rakugaki Showtime* (PlayStation) were exclusive to the system in question and weren't converted to other consoles. Treasure even moved briefly into arcade development with the acclaimed shoot-'em-ups *Radiant Silvergun* and *Ikaruga* but it predominantly remained a console developer.

Despite numerous great games, Treasure certainly wasn't bulletproof and has made the odd fumble over the years, most notably with titles like *Freak Out, Dragon Dive: D-Masters Shot* and *Silpheed: The Lost Planet* (the first sequel the developer would work on). And yet the early brilliance of the company could easily be found in the likes of *Astro Boy: Omega Factor*, *Gradius V* and *Bangai-O Spirits*. Ironically, burgeoning development costs and the general nature of the videogame industry meant that many of Treasure's later games would be licensed or sequels, the latter of which Maegawa and his team had bullishly avoided for so long. Treasure's last original IP was *Ikaruga* (2001), which in recent years, has been released on modern consoles as well as the PC.

It's unclear if we'll ever see any new games from Treasure (its last release was *Gaist Crusher God* in 2014), but what is clear is the legacy of eclectic and often sensational games that the company has crafted over the past three decades. So join us then as we look back at every game in Treasure's diverse catalogue with curated picks from Treasure's very own Masato Maegawa.

MASATO MAEGAWA

» Treasure's president was originally at Konami where he worked on many popular games. He formed Treasure in 1992 and still oversees it today.

GUNSTAR HEROES

MEGA DRIVE, 1993

Few debuts have impressed as much as Treasure's eponymous run-and-gun. Not only is it a technical showcase of just what is possible on Sega's 16-bit console, it also features gameplay mechanics that are just as accomplished as its stunning aesthetics. No idea in *Gunstar Heroes* is too bold to try, no boss design too outrageous to include. There's a charming kitchen-sink approach to Treasure's game but it works beautifully. The end result is a dazzling, fast-paced shooter that constantly throws curveballs and continually impresses you with its sheer creativity.

MAEGAWA MEMORIES

With *Gunstar Heroes*, we decided just to go all out and make the action game of our dreams. It was really a case of anything goes! We used our imagination to realise functions that weren't actually featured in the Mega Drive hardware, such as the polygonal Treasure logo, the rotating title logo and the multi-jointed appearance of Seven Force.

MCDONALD'S TREASURE LAND ADVENTURE

MEGA DRIVE, 1993

Upon forming Treasure, Maegawa split his staff into two teams: one group worked on *Gunstar Heroes*, the others created this charming platformer. Despite the odd nature of its licence, *Treasure Land Adventure* proves to be an enjoyable romp and has just enough inventiveness and technical prowess to make it obvious who the developer is. It's perhaps the least challenging game Treasure made for Sega's console, but that's to be expected when you consider the target audience.

MAEGAWA MEMORIES

The boss characters were originally going to eat hamburgers, but we were told not to treat McDonald's burgers with such disrespect, so instead the bosses ended up as these weird gem-eating characters. Anyway, we packed in as many interesting ideas as we could, including a rotating, scaled Treasure logo. Actually, if you enter a secret password the password entry screen itself turns into a polygonal display.

DYNAMITE HEADDY

MEGA DRIVE, 1994

While Treasure was more than happy to tackle conventional genres, it often found ways to subvert them, whilst showing off its technical skills at the same time. *Dynamite Headdy* is one such game and it turns the platform genre on its head by giving your main character plenty of new ones. Mastering the 18 different noggins Headdy can collect is the secret to success and you'll typically have to use them to best the game's outrageously designed bosses that range from a mechanical toy dog to a gargantuan robot baby head. It all amounts to a polished jewel that's as challenging as it is eccentric.

HEAD'S UP!

A selection of Headdy's bonces and how they affect him

PIG HEAD
This porcine transformation lets Headdy shoot out stars from his snout that will then track down any nearby enemies. It can fire continuously too.

BOMB HEAD
This one-use head has the ability to kill all on-screen enemies, but there is a downside. If Headdy doesn't throw it fast enough he'll lose a life.

SUPER HEAD
This useful noggin not only grants Headdy super speed but lets him jump higher and throw his head further as well, which is very handy.

AIR HEAD
This noodle is only used in certain sections of the game and grants Headdy the ability to fly. Additionally he can fire out bullets in three directions.

EMPTY HEAD
This coconut turns our hero Headdy completely transparent. Asides from looking rather cool it also lets the little tyke avoid most attacks for a limited amount of time.

TICKER HEAD
Overwhelmed by enemies? No problem. Simply attach this stylish dome and you can temporarily freeze enemies, allowing you to attack without fear of reprisal.

SLAMMER HEAD
This metallic cranium is rather useful for Headdy as it dramatically increases his attack power. It can also be used to break specific blocks.

LIBERTY HEAD
Based on the statue, this bean will transport Headdy to an entertaining basketball minigame where he has to shoot hoops against a strict time limit.

MAEGAWA MEMORIES

In *Dynamite Headdy* we achieved various tricks with the Mega Drive hardware, including rotation on the X, Y and Z axis, background overwriting and background layering. The silly Maruyama character was said to not look like a bad guy, so we changed him into a scary character for the overseas version.

YU YU HAKUSHO MAKYO TOITSUSEN

MEGA DRIVE, 1994

■ This is Treasure's least known Mega Drive game, largely because (aside from Brazil) it was never released outside of Japan. Even though it lacks the aesthetic verve found in earlier Treasure games it nonetheless bristles with ingenuity, offering brawls that cater for up to four players, as well as the ability to jump between planes (something the studio would revisit with its later brawler, *Guardian Heroes*). It's not as easily accessible as other Treasure games due to the multilayered combat and Japanese menus, but it's certainly worth persevering with and the large number of game modes means it offers plenty of longevity.

MAEGAWA MEMORIES

"This was actually an original game of ours called *Senjutsu Kakuto Axion*, but we ended up transforming it into a different game with the *Yu Yu Hakusho* cast of characters. Our main programmer is a fan of the Hiei character, so we were able to make our version of Hiei look like the real thing. The concept was to make a four-player fighting game with simple controls. During our work breaks at that time, everyone who worked at Treasure would get together and battle it out on this game."

LIGHT CRUSADER

MEGA DRIVE, 1995

■ Bland is perhaps the best way to sum up Treasure's final Mega Drive game. While it offers an eye-catching isometric viewpoint at times and some gigantic and detailed bosses, its imprecise combat mechanics and slow pace makes it feel a world away from Treasure's other Mega Drive releases. *Light Crusader* makes a decent attempt of straddling genres, including platforming, puzzle-solving and action-based combat, but it doesn't blend them quite as well as earlier Treasure games. A rare misfire.

MAEGAWA MEMORIES

"*Light Crusader* came about because we wanted to try making an isometric game on Mega Drive. We used 16 or more colours to draw the goddess statues that act as save points, and I think they're really beautiful. I can still remember being shocked by how good they looked the first time I saw them on-screen."

ALIEN SOLDIER

MEGA DRIVE, 1995

■ All the technical wizardry that Treasure learned while coding for Sega's 16-bit console is put to the test with *Alien Soldier*. It's an astonishing showcase of what Sega's machine is capable of and constantly pushes the hardware with its dazzling display of pyrotechnics. Its difficulty is just as monumental as its visuals and you'll need nerves of steel and an intimate understanding of Epsilon-Eagle's abilities if you expect to run the gauntlet of inventive bosses on a single credit. It might just be a glorified boss rush, but what a boss rush it is.

MAEGAWA MEMORIES

"*Alien Soldier*'s Seven Force boss [which originally appeared in *Gunstar Heroes*] only has five variations here, but really we wanted to call it 'Seventy Force' and have it transform into 70 different variations, which would have been an absurd specification. But unfortunately time was against us, with the development of *Alien Soldier* cut short by the arrival of the Sega Saturn. Anyway, the concept of this game was to pack it full of multi-jointed bosses, with 100 bosses appearing in succession. The opening demo hints at the full detail of the world and scenarios we were planning, but in-game this was mostly cut, and we only returned to and explored this world concept in full in *Sin & Punishment*."

ALIEN SOLDIER FACT FILES

Cool stuff about Treasure's cult game

1. *Alien Soldier* had a lengthy development cycle for a Treasure game and took over two years to make.
2. Its producer, Hideyuki Suganami was heavily invested in its creation and originally intended to make it on his own.
3. Interestingly, Treasure's game never received a physical release in the US and was instead made available on the Sega Channel.
4. This has probably led to it being one of Treasure's most coveted Mega Drive releases. PAL copies can reach £300 while Japanese versions go even higher.
5. If £300+ is too steep, *Alien Soldier* is readily available on numerous formats, along with *Gunstar Heroes*, *Dynamite Headdy* and *Light Crusader*.

GUARDIAN HEROES

SATURN, 1996

Treasure's highly anticipated first step into the 32-bit generation was a triumphant one, as the developer made a beat-'em-up unlike any other. As well as offering huge battles, the game includes RPG elements which allow you to develop your character, and multiple story paths with a variety of different endings. The Xbox 360 version ups the ante with an arcade mode and online play.

MEET THE TEAM

Your guide to the combatants in Guardian Heroes

GINJIROU
What would this adventuring party be without a ninja? Less verbose probably, as he loves to wax philosophical. When he goes to kick some ass, he's a master of speedy attacks.

HAN
This meaty mercenary has a personality almost as large as his sword. He's not flashy and he's not a particularly effective magic user, but Han gets the job done when brawn is required.

NICOLE
You wouldn't believe she's a fighter at first glance, or second for that matter. But she'll put a smile on your face, and all over your screen, if you learn her – she's just that type of woman.

RANDY
This teenage mage has a rabbit and a curse – he's the straight man to a group of oddballs. Effective use of Randy requires some skill, so he might not be the best choice for a beginner.

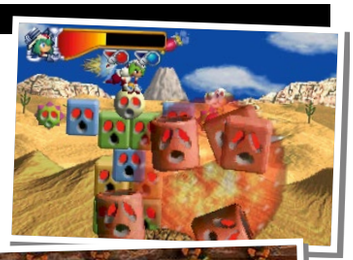
SERENA
She's the balanced choice and a fine foil for Han, but Serena's not available during your first run of the game. To find out why, you're just going to have to roll your sleeves up and get stuck in.

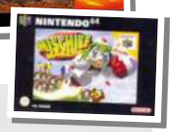
MAEGAWA MEMORIES

We managed to create a six-person fighting action game with the Sega Saturn version, while the Xbox Live Arcade version that's still available for download raises the bar to 12-person battle play. Playing with a large number of people is always fun. I love the chaotic scenes where it's difficult to even locate your own character. When the game was originally released, everyone in the videogame media was asking us to tell them the correct character configurations, but the correct way to enjoy *Guardian Heroes* is to play by your own rules.

MISCHIEF MAKERS

N64, 1996





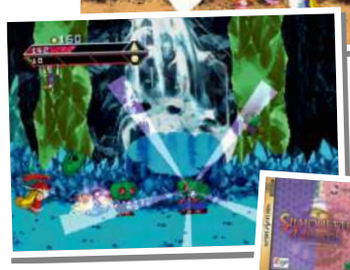
Treasure's first venture away from Sega's consoles was an unusual game in many ways. The central mechanic of grabbing things in order to shake, throw and otherwise manipulate them was quite distinctive at the time – as was the visual appearance of the game, with the slightly unnerving faces everywhere. *Mischief Makers*' 2D game design wasn't too fashionable at the time and the game was somewhat overlooked by both critics and players as a result, but the game is well worth revisiting today.

MAEGAWA MEMORIES

At first the development environment just wasn't there, and trying to make a 2D game with the unfamiliar 3D development environment of the N64 caused us all kinds of difficulties – and that's why we called the Japanese version of the game *Troublemakers*! Still, we had a lot of fun creating unique gimmicks for each stage. The *gattai* [combination/coalescence] of the multi-jointed bosses is definitely a highlight.

SILHOUETTE MIRAGE

SATURN, 1997/PLAYSTATION, 1998



In a world where everyone has been mutated into polarised silhouette or mirage forms, Shyna is the only one who can set things right. Actually, that should be left *and* right, since her attacks are also polarised based on the direction she's facing – a theme that Treasure would later revisit. It's another very good game, but the North American PlayStation version published by Working Designs features some major changes from the Japanese version, including a higher difficulty level.

MAEGAWA MEMORIES

When we started planning *Silhouette Mirage*, the idea was to make ghosts appear if you continued using only one type of attack. We thought we could make a more interesting type of action game with the idea of switching between different attributes depending on whether the character was facing left or right, but it took a lot of work to achieve this without making the controls too tricky or complicated.

RADIANT SILVERGUN

ARCADE/SATURN, 1998

If you could only describe one Treasure game as legendary, *Radiant Silvergun* would surely have to be it. It's legendary for its unique design, which ditches power-ups and instead encourages you to enhance a wide range of standard weaponry by shooting down enemies in colour combinations. It's legendary for extracting maximum performance from Sega's notoriously complex Saturn hardware. Thanks to high demand, the Saturn version is also legendarily expensive. Thankfully, the game was re-released digitally for Xbox 360 in 2011 and works on modern Xbox consoles via backwards compatibility.

MAEGAWA MEMORIES

Radiant Silvergun is full of homages. If you know what we're parodying, you won't be able to help laughing. I think the last boss in particular, XIGA, is really playful and imaginative. The concept was always about combining puzzle elements with shooting. As an arcade game it was arguably too long for a single play through, so we cut some of the stages.

LOST IN TRANSLATION

How the arcade version of Radiant Silvergun was maimed for the West

If you're going to buy an original copy of *Radiant Silvergun*, it's probably the Saturn version, but you may find yourself tempted to pick up an ST-V arcade cartridge. However, a nasty surprise potentially awaits those that take this alternative route as *Radiant Silvergun* requires a Japanese BIOS to work properly. While the game will start up and play just fine, the control scheme is reduced to just two buttons, leaving you without access to most of the weaponry that you're supposed to have. Fortunately, the cartridge is not region locked, so a Japanese ST-V motherboard or a modded BIOS will solve this problem for you.

RAKUGAKI SHOWTIME

PLAYSTATION, 1999

Treasure's only PlayStation exclusive features scribbled characters battling each other in a 3D arena, which inevitably draws comparisons with Capcom's *Power Stone*, but the act of throwing objects is far more important in *Rakugaki Showtime*. It's quite expensive now, but did get a PlayStation Network digital release in Japan.

MAEGAWA MEMORIES

You can actually play *Rakugaki Showtime* on a 'super' difficulty setting that can be unlocked by entering a poke [on the title screen hold L1 + R2 + Select + Left + Triangle + X for ten seconds until you hear an explosion, and repeat this twice to find 'super' as an option in the unlocked stage select mode], and this is how we originally intended it to be played. In four-player mode, not being able to keep track of what's going on is part of the fun! I think it's cool that rather than aiming for detailed, beautiful graphics, we went down the road of *rakugaki* [scribbles] and paper.

BANGAI-O

N64/DREAMCAST, 1999

They say that size matters, and *Bangai-O* certainly proves that. You take control of a flying mech suit which can fire in eight directions, with the goal of taking out enemies and bosses. All of these are far smaller than you'd expect, but that's all in service of packing more stuff onto the screen – enemies have plenty of firepower, and you have a counterattack that responds to the proximity of enemy fire, spewing out potentially hundreds of missiles. Add some very bizarre dialogue and characters, and you've got a ready-made cult favourite.

MAEGAWA MEMORIES

To begin with this was just a pure action game, but it suddenly became a shooting game when we implemented the idea of firing bullets. Then the concept became a challenge to ourselves, to see how many bullets we could draw on-screen! I think the edit mode and the 'sound load' function of the DS version, *Bangai-O Spirits*, are also really interesting ideas.

GUNBEAT

ARCADE, CANCELLED (2000)

Treasure's first game to be cancelled after announcement was destined for Sega's NAOMI arcade board. *GunBeat* made limited appearances at trade shows and location tests, but today only images and video footage remain, with no playable version of the game available officially or otherwise.

MAEGAWA MEMORIES

Our plan for *Gunbeat* was to combine racing and explosive shooting action in an arcade game, but to be honest it just wasn't much fun to play, so we abandoned the project. Sad to say, the only thing we completed was the opening movie.

SILPHEED: THE LOST PLANET

PS2, 2000

Few people likely expected Treasure to create a sequel to Game Arts' fondly remembered shoot-'em-up – and unfortunately, this early PS2 effort isn't quite as memorable as the original, or indeed Treasure's other efforts in the genre. It was an impressive sight to behold at the time, with some very exciting real-time 3D backgrounds rather than the pre-rendered ones used in the Mega-CD game. The gameplay is solid enough but rather basic, and the difficulty is fairly low on the default setting.

MAEGAWA MEMORIES

"The original concept with *Silpheed* was to present life forms in a unique way on the Dreamcast, but one day we suddenly decided to remake the game for PlayStation 2. From the outset we were producing a huge amount of storyboards and I remember that we were holding meetings every week to direct the production."

FREAK OUT

PS2, 2001

Treasure has never been averse to the absurd and bizarre, but this 3D action game is arguably the company's weirdest game. Linda's 12 sisters have been possessed by demons, and she'll have to fight all of them as bosses in order to save them. Her key power is her possessed scarf, which can be used to grab and stretch enemies and the environment, allowing for pinching attacks and slingshot jumps. *Freak Out* (or *Stretch Panic* in the US) looks and feels unique, but it tends to divide opinion – though if you do fancy trying it, copies are cheap and plentiful.

MAEGAWA MEMORIES

"Our initial plan was to implement gimmicks using shadows, and not just the idea of pulling, but unfortunately the shadow feature had to be cut because we received feedback saying that the action would become too complicated and difficult to grasp. But I still want to try it out someday."

SIN & PUNISHMENT

N64, 2000

This 3D shoot-'em-up is arguably the most essential import game in the N64 library, featuring spectacular graphics and non-stop action. *Sin & Punishment* plays similarly to the likes of *Cabal* – you control a character in the foreground, and dodge left and right to avoid incoming fire while shooting into the screen at enemies. The ability to move and aim simultaneously, as well as the 3D stages, are what set it apart from older takes on this style of shooter.

MAEGAWA MEMORIES

"Originally this was going to be called *Glass Soldier*, as it had intricate links with *Alien Soldier*. The concept was built up around using the N64 controller's left position, and it's really difficult to control like that, so we were looking at implementing an aiming function in the Controller Pak, but unfortunately that never came to pass. However, in the sequel this was easy to realise using the Wii Remote."

JOURNEY TO THE WEST

How Sin & Punishment finally made its international debut

- With English voice acting, *Sin & Punishment* never felt destined to remain in Japan alone.
- Nintendo announced an E3 2001 showing, but the game never made the show floor.
- In 2004, the game was translated into Chinese and released for the iQue Player.
- The game was finally released in English via the Wii Virtual Console service in 2007.
- Its Wii U debut was in 2015, and it's the only way to buy the English version today.

TINY TOON ADVENTURES: BUSTER'S BAD DREAM

GAME BOY ADVANCE, 2002

This scrolling beat-'em-up might be a surprise to many of you. You take control of Buster Bunny, pick a partner – each with different abilities, of course – and then try to fight your way through a nightmare filled with hostile creatures. It's tougher than you'd expect for a game that would be ostensibly aimed at kids, but the bigger surprise is the combat design, filled with combos, knock-back attacks launchers and special attacks. It's a bit repetitive and simple in structure, but players of *Astro Boy: Omega Factor* can easily see how this design forms the basis for the more celebrated game.

SCARY REALITY

The strange story of the North American version

There are very few differences between the European and North American versions of this game – a different title necessitates a different title screen and, obviously, packaging too. The game was finished and ready to go in 2002 yet the American release remained on ice for years, only eventually emerging in limited quantities in 2005, by which time the Game Boy Advance had been succeeded by the DS. The packaging and title screens still bore their 2002 copyright dates, too. So what exactly happened here? Nobody quite knows for sure – common theories suggest a publishing problem with Conspiracy Entertainment, most likely that it had lost the licence before it could go to market. It's highly likely, however, that whatever caused this incident probably had a lot to do with the cancellation of Treasure's other *Tiny Toons* project with the same publisher.

MAEGAWA MEMORIES

This title wasn't even released in Japan, but it was produced by our *Bangai-O* team. Actually, the original *Bangai-O* was a collaborative action game like *Buster's Bad Dream*. I think it's a cool title full of interesting systems such as the partner character system and continuous combos.

IKARUGA

ARCADE, 2001/DREAMCAST, 2002/GAMECUBE, 2003

By taking the weapon polarisation of *Silhouette Mirage* and the enemy chaining of *Radiant Silvergun*, Treasure created one of the most revered shoot-'em-ups of all time. *Ikaruga* doesn't just play well, though – as your ship majestically swoops through the air to a stirring soundtrack, it's clear that the presentation is top notch too. It's on Xbox, PS4, Switch and PC these days, so don't miss out.

MAEGAWA MEMORIES

We took the prototype of *Ikaruga* to many different publishers but no one wanted to release it, so in the end we decided to make it a self-published Treasure release. With *Ikaruga* I feel we took the puzzle and shooting style of *Radiant Silvergun* as far as it could go. If you could play *Ikaruga* in slow-motion, it would be the definition of a puzzle game! The one tricky part of development was that we struggled to assemble a team of testers because not everyone was capable of bug-checking the game.

TINY TOON ADVENTURES: DEFENDERS OF THE UNIVERSE

PS2/GAMECUBE, CANCELLED (2002)

The second known example of buried Treasure was very similar in gameplay terms to *Rakugaki Showtime*, but with the likes of Buster Bunny and Plucky Duck lobbing balls at each other. The reason for the project's cancellation has never been revealed, but a playable version of the game has been circulating for years now.

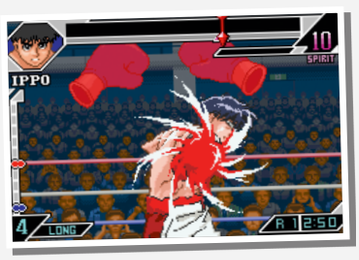
HAJIME NO IPPO: THE FIGHTING!

GAME BOY ADVANCE, 2002

You may not be aware of this boxing manga, but it's a real staple of the scene in Japan – it has been running since 1989. While this might look like a certain other popular boxing game, there's actually quite a bit more going on in this nifty Japanese exclusive. You have quite a few more defensive options to go with the one button punching system, and range matters as some fighters have better reach than others.

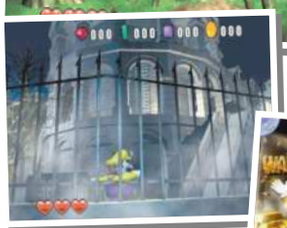
MAEGAWA MEMORIES

This plan came about because some of our development team members were huge fans of *Hajime No Ippo*. In fact, they used to keep the entire collection of *Hajime No Ippo* manga here at the Treasure offices. The strategy in the game is taken straight from the boxing concept of 'wait for an attack, dodge it, and then attack'. Countering is the key element of the game, just as it is in the manga.



WARIO WORLD

GAMECUBE, 2003



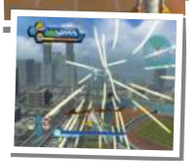
■ You can never keep Wario away from a treasure hunt for long, so it makes sense that Treasure was the team to give Mario's greedy rival his first 3D platform outing. Plenty of the charm you'd expect is there, as it's a nice-looking game with some decidedly old-school platforming sensibilities, with plenty of hidden hauls of gold to pick up. Unfortunately, for all of *Wario World*'s good points, it is a very short game that garnered criticism for being repetitive – a word not normally used to describe Treasure's earlier games.

MAEGAWA MEMORIES

We made the Japanese version of *Wario World* after the overseas edition had been released, so we took the opportunity to make various changes. For example, the main programmer was particularly attached to the last boss, so for the Japanese version we did a remake. Really we wanted to make the game a bit bigger and pack in some extra features, but there was only so much we could do.

DRAGON DRIVE: D-MASTERS SHOT

GAMECUBE, 2003



■ This Japan-only release is a videogame adaptation of a manga about a fictional videogame in which people battle with virtual dragons. Got that? Good. It's a 3D shooting game with some on-rails areas similar in style to *Panzer Dragoon* and some open areas closer to *Zone Of The Enders*, both of which task you with destroying other dragons, as well as duels with bosses. Power-ups appear in the form of cards, which can be activated using the D-pad. Sadly it just isn't as compelling as it could be – the visuals are only OK, and the stages aren't tremendously exciting.

MAEGAWA MEMORIES

From the beginning we had been planning to produce a 3D shooting game, so it was quite fortuitous that the opportunity arose to work with such a perfectly suited property as *Dragon Drive*. Development wasn't all smooth sailing – we had some problems, including the absence of our main programmer – but we got there in the end.

ASTRO BOY: OMEGA FACTOR

GAME BOY ADVANCE, 2003

■ Though it includes some light platforming and shoot-'em-up elements, this licensed game is more beat-'em-up than anything else. With vast hordes of enemies to tackle, you'll quickly realise that Astro Boy's special attacks aren't to be jealously hoarded, but deployed frequently and quickly rebuilt with punches and kicks. The imaginative and often technically marvellous boss battles are a highlight of the game, as is the time-travel twist that kicks in just when you think you know exactly how the game is going to play out. It's one of the very best games for the GBA.

TEZUKA WORLD

This cast goes beyond Astro Boy – let's trace their origins

SHARAKU

This antagonistic chap originates from *The Three-Eyed One*, which ran from 1974-1978. He's normally not a bad chap, unless you remove his bandage and reveal his third eye – which gives you an idea of the role he plays here.

BLACK JACK

One of Tezuka's most famous creations is the best unlicensed doctor you're ever likely to come across – as well as the most expensive. In this game, he serves as an ally to Astro, taking a plot role and nothing else.

PHOENIX

This icon of rebirth stars in *Phoenix*, a manga that Tezuka considered to be his life's work, which he worked on for decades prior to passing away in 1989. She becomes involved in proceedings at an unexpected point in the game.

MAEGAWA MEMORIES

This is really an 'Osamu Tezuka World' game. There was someone from Sega always hanging around here during development and we had a lot of intense discussions [laughs]. After releasing the Japanese version we had more time to work on the overseas edition, so that became the definitive version.

GRADIUS V

PS2, 2004

Events have a funny way of shaking out, and Treasure being entrusted with one of Konami's legacy series felt like circumstances coming full circle. *Gradius V* is an excellent entry in the series, with plenty of respect for series traditions as well as something new to offer, in terms of the control that the player has over the option drones. It's also possible to regain your options after death, which is very welcome considering that the game is very tough – but then, *Gradius* always is. It certainly doesn't always look and sound as good as this, though.

MAEGAWA MEMORIES

"As this was a numbered entry in the famous series, development was enjoyable in some respects and difficult in others. One of our concepts was to introduce weapon edit and option control features. But I think the game itself was a little too long. Also, our work was complicated by the fact that we were opening a third office around the time when we were developing *Gradius V*."

ADVANCE GUARDIAN HEROES

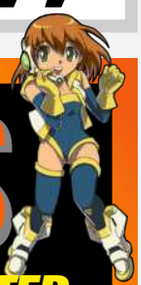
GAME BOY ADVANCE, 2004

Treasure's first direct sequel was certainly an ambitious one, bringing the chaotic action of *Guardian Heroes* to the small screen. At times, it seems too much for the handheld to cope with, as the game is prone to frequent bouts of slowdown when everything gets a bit too hectic. However, the depth of the combat system and the sheer scale of the battles are hard to match on the Game Boy Advance, and the classic Treasure set-pieces like the amazing river raft stage are all present and correct. It's not quite a match for the original, but if you've played that to death and you're hungry for more, *Advance Guardian Heroes* is definitely a game you should try.

MAEGAWA MEMORIES

"*Advance Guardian Heroes* is all about the four-player versus mode. I hope that players will set various rules and enjoy strategic battles with other players using counters. We love countering systems, and that's why they're deployed as the crux of so many of our games."

GUNSTAR FUTURE HEROES



GAME BOY ADVANCE, 2005

The apple doesn't fall far from the tree – like its predecessor, *Gunstar Future Heroes* is technically impressive and action-packed. It's even stuffed with more variety if you can believe it, with homages to games like *Flicky* and *After Burner* joining callbacks to the original game. We just wish there was more of it, as the game is a little on the short side.

MAEGAWA MEMORIES

"I remember building and rebuilding stages over and again. All sorts of stages didn't make the final cut, including one where you had to climb up a waterfall. There was even a 'file crusher' that would delete your save data. It was so funny, but unfortunately we had to cut that because it would go against game production standards. I really regret having to leave that out, though. The Sega game homage stage originally had way more elements, including an homage to *ESWAT* and many other titles, but we couldn't get it completed and in the end many elements were cut."

DELETED SCENES

Maegawa wasn't kidding about how much was cut – here are some examples

- An *Altered Beast* room, as seen in this pre-release screenshot. Unfinished sprites for the dragon are found in the final game, as well as some sprites for the bear.
- Sprites for the *ESWAT* protagonist also appear, though only a few, with no further context provided.
- The *After Burner* track *Final Take Off* was heard in a trailer, yet remains unused despite its section of the game making the final cut.
- Music from many more Sega games can be found in the game's data, including *Altered Beast*, *Super Thunder Blade*, *Galaxy Force II*, *ESWAT* and *Golden Axe*.

BLEACH: THE BLADE OF FATE

DS, 2006

This fighting game is the first of Treasure's three adaptations of this incredibly popular manga series, in which the teenager Ichigo Kurosaki acts as a soul reaper – a guide for souls crossing into the afterlife, and a fighter of dangerous restless spirits called hollows. Up to four characters can take part in fights, making it somewhat reminiscent of *Yu Yu Hakusho*, and players can use the touch screen to activate special cards that have status altering effects during combat. Fans will enjoy the fact that there's plenty of story content, too. It's not one of Treasure's better known games, but it may well surprise you if you give it a try.

SEGA AGES 2500: GUNSTAR HEROES TREASURE BOX

PS2, 2006

While Treasure didn't make this compilation, Maegawa did oversee it. This compilation includes the Mega Drive and Game Gear versions of *Gunstar Heroes*, as well as a hidden prototype version of the Mega Drive game. The title of this one is actually a little bit of a misnomer. *Gunstar Heroes Treasure Box* also features *Alien Soldier* and the Mega Drive, Game Gear and Master System versions of *Dynamite Headdy*, which makes it a rather nice tribute to the studio's 16-bit years. This is the only compilation of Treasure games to date, and benefits from being developed by the emulation experts at M2.

BLEACH: DARK SOULS

DS, 2007

No, not *that Dark Souls*. This follow-up to Treasure's previous *Bleach* game delivers more of the same four-way fighting action, and does everything you'd expect a fighting game sequel to do, adding new moves for the old characters as well as a batch of additional fighters. The number of cards you can bring into battle has also been doubled to four. It's not tremendously different from its predecessor, but that still means that you're getting a high-quality experience, and hardcore followers of the manga and anime will doubtless want to experience it just for the story.

BANGAI-O SPIRITS

DS, 2008

The sequel to *Bangai-O* adds plenty of new weaponry, as well as the ability to knock enemies backwards with melee weapons like the baseball bat, potentially causing a domino effect. It also adds a completely new cast, though there's not much of a story – in fact, one of the characters is admonished in the ending for wanting to trade the game in. That's because Treasure really gave players the keys to the castle here, with a level editor and an innovative 'sound load' feature that enables custom stages to be shared as audio, to be played into the DS microphone. It's really rather good.

THE NEXT LEVEL

Looking for some levels to sound load? We've got you covered

***Bangai-O* Custom Levels Repository**
bit.ly/bangaiocustom

A curated list of stages, with instructional content on how to get the stages working and a variety of links to other resources. It's highly recommended.

***Bangai-O Spirits* Sound Load Vault**
bit.ly/bangaiovault

This is a very comprehensive archive to visit that seemingly aims to compile all custom stages that are available online, including an extremely impressive YouTube directory.

SIN & PUNISHMENT: SUCCESSOR OF THE SKIES

WII, 2009

Set many years after the events of the original game, *Sin & Punishment* casts you as Isa Jo, son of the original game's protagonists Saki and Airan, as he attempts to protect a mysterious girl named Kachi whom he had previously been ordered to kill. *Successor Of The Skies* (or *Star Successor* in North America) takes everything about the original game and turns it up to 11 – it's longer and more challenging, it's more intuitive to play thanks to the use of the Wii controller as a pointer, and it's an absolute audiovisual feast. As Wii exclusives go, it's one of the very best.

MAEGAWA MEMORIES

"We even discussed having a sensor when we were making the N64 game and so, as soon as I saw the Wii Remote, I felt that we had no choice but to make a sequel."

CHOOSE YOUR COMPANION

Isa and Kachi have slightly different capabilities – who should you choose?

ISA

If you're a *Sin & Punishment* veteran or just fancy yourself a steady aim, Isa's the guy to go for. He can dish out more damage with manually aimed shots, and has a superior rate of fire to Kachi. If you take the time to load up a charged shot, Isa will deliver one gigantic targeted blast, which is likely to help you take down bosses with ease.

KACHI

Newcomers may find themselves better placed to deal with the challenge of the game if they pick Kachi. She doesn't lose any power by using auto-lock shots over manual aiming, making it easier to concentrate on dodging incoming fire. Her charged shot is a multi-target homing attack, which can help to clear the screen in hectic moments.

BLEACH: VERSUS CRUSADE

WII, 2008

Unlike Treasure's other *Bleach* games, this one was only released in Japan. Rather than battling on a 2D plane as in the DS games, Ichigo and his compatriots now fight in 3D arenas, with an over-the-shoulder perspective that will be familiar to fans of other anime fighting games like *Dragon Ball Z: Budokai Tenkaichi* and *Naruto: Ultimate Ninja Storm*. It's a decent enough outing, especially if you choose traditional controls over motion controls, and there are plenty of unlockables including many of the 25 characters on the roster. However, it's not quite up to the standard of the DS games.

BANGAI-O HD: MISSILE FURY

XBOX 360, 2011

Treasure's first foray outside of the world of boxed games is also the only time the developer has created a second sequel to one of its original properties. Any pretence of a plot is dropped completely here, and if you're hoping that the HD visuals will aid in clarity, be assured that there's even more on-screen than ever before. *Bangai-O* enthusiasts will have great fun with the dozens of levels provided, but newcomers may struggle a bit with the frequent difficulty spikes. Unfortunately, right now the game hasn't been added to Xbox backwards compatibility, so you'll need a 360 to play it.

GAIST CRUSHER

3DS, 2013

This Japan-only game was intended to be the central pillar of a cross-media franchise, with Capcom publishing the game, and manga and anime adaptations to accompany it. The game itself sees you play as one of the titular gaist crushers, who wear their gaist gear armour to fight the gaimetal-encrusted gaist creatures (that's some strong branding). In practical terms, this means 3D hack-and-slash action with some cool bosses and interesting customisation options. Repetitive stages and some clunky mechanics do somewhat mar the experience, though. If you're thinking about importing it, though, you should really do yourself a favour and read the next entry.

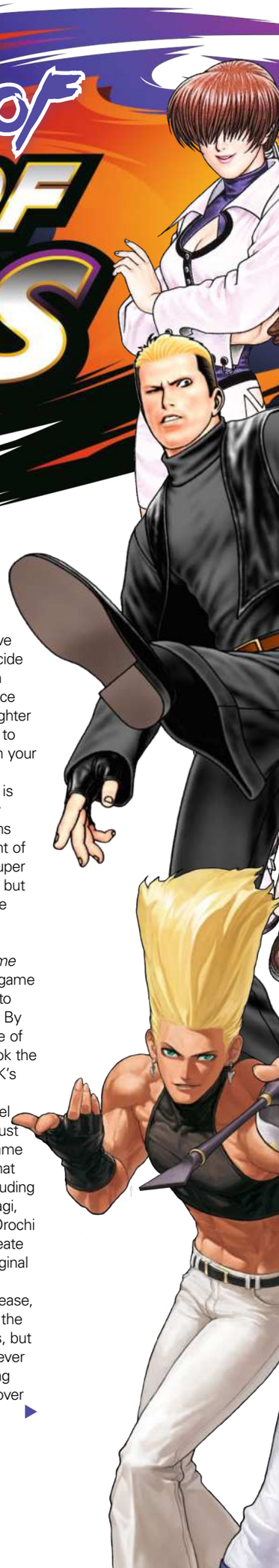
GAIST CRUSHER GOD

3DS, 2014

Treasure's final development to date actually serves a dual purpose – as well as including a whole new story, focusing on the emergence of the more dangerous creatures, *Gaist Crusher God* includes the original game's story and refines the game design to some degree. All of the story mode missions can be played on easy difficulty, and the powerful extreme form attacks can be cancelled mid-way through. Despite the improvements, the repetitive structure of the original game persists, but this is definitely the preferred version to pick up if you're interested in adding it to your collection.

THE EVOLUTION OF THE KING OF FIGHTERS

WORDS BY NICK THORPE AND DARRAN JONES



SNK'S MAGNIFICENT CROSSOVER SERIES HAS BEEN ENTERTAINING FIGHTING FANS SINCE 1994. AS THE STUDIO CONTINUES WORK ON THE 15TH INSTALMENT OF THE BELOVED FRANCHISE, WE QUIZZED YASUYUKI ODA AND EISUKE OGURA ABOUT THE MANY ELEMENTS THAT HAVE DEFINED THE SERIES

The success of *Street Fighter II* saw a number of arcade developers move into the genre, in an attempt to wrestle the fighting crown from Capcom. One of the most successful studios to break Capcom's stranglehold was SNK. It launched a strong uppercut against *Street Fighter II* thanks to the release of *Fatal Fury: King Of Fighters* in 1991, which was overseen by *Street Fighter*'s original creator Takashi Nishiyama.

Finding success with the game, SNK delivered a string of successful counters over the following years, including a sequel to *Fatal Fury, Art Of Fighting* and *Samurai Shodown*. In short, if the studio couldn't topple Capcom's brawler in a one-on-one battle, it could at least overpower its competitor through sheer diversity.

Street Fighter II's popularity stayed strong throughout the early Nineties, with Capcom cannibalising its own CPS arcade boards and releasing numerous revisions in order to meet the voracious demand for its venerated fighter. It was becoming obvious that SNK wasn't going to bring down the behemoth so it did the next best thing, it pivoted and delivered a knockout blow of its own…

The King Of Fighters was notable on release not just because it featured characters from earlier SNK games, including *Fatal Fury* and *Ikari Warriors*, but also because it focused on team-based play. The diverse cast of 24 playable characters spread across eight teams means there's an equally eclectic range of fighting styles to master. Matches also play out differently because SNK turned its back on the standard best of three matches that had dominated the genre and introduced the innovative 'Team Battle System'. Upon choosing a team you decide the order in which your teammates will fight and then keep going until only one team is left standing. In a nice touch, a small amount of energy is restored to your fighter upon defeating an opposing character so it's possible to best an opposing team without even having to rely on your fighter's teammates.

Another mechanic featured in *The King Of Fighters* is the ability to charge your character's Power Gauge by holding down specific buttons. Filling the gauge means your base attacks become stronger for a short amount of time and it's even possible to pull off a devastating Super Move (at the expense of depleting your entire gauge) but the trade-off is that you're completely vulnerable while charging, creating a neat risk vs reward system.

Despite arriving in late 1994, *The King Of Fighters* made an immediate impact in Japanese arcades. *Game Machine* ranked it as the second best earning 'table' game in its first two weeks on sale, meaning it lost ground to Sega's impressive and ground-breaking *Virtua Fighter*. By the year's end it ranked as the fifth best earning game of 1994. Granted, Capcom's *Super Street Fighter II X* took the top spot but it did have a full six-month start over SNK's game so it remains an impressive debut.

The success of *The King Of Fighters* meant a sequel was inevitable with *The King Of Fighters '95* arriving just over a year after its predecessor. It largely kept the same formula as before but made a few notable changes that have endured throughout the series' later games, including the introduction of Iori Yagami as a foil for Kyo Kusanagi, the first hints of an overarching story known as the 'Orochi Saga' and, perhaps most importantly, the ability to create a custom team, which had been missing from the original game and was greatly criticised in reviews.

SNK's series has continued to evolve with each release, pulling in characters from other SNK franchises along the way, occasionally revisiting earlier games in the series, but always staying true to its arcade roots. While it has never quite escaped the reach of *Street Fighter* many fighting fans consider it to be just as important and we'll discover how that happened over the following pages.

YASUYUKI ODA

is a lead producer at SNK and has worked on numerous fighting games, including *The King Of Fighters, Street Fighter X Tekken* and Super *Street Fighter IV.*

EISUKE OGURA

wears many hats and is currently the director, main illustrator and character designer for *The King Of Fighters XV.*

CHARISMATIC COMBATANTS

» The Japanese team of Kyo, Benimaru and Daimon was created specifically as a heroic team for *The King Of Fighters '94*.

» Kyo's rival Iori has a very distinctive character design, and is one of the series' most popular characters.

BETWEEN ITS CROSSOVER STARS AND ITS ORIGINAL CAST, THE KING OF FIGHTERS WOULD BE NOTHING WITHOUT ITS CHARACTERS – AND WE MEAN THAT QUITE LITERALLY

It's no exaggeration to say that characters are at the heart of *The King Of Fighters* series. Well before the first game in the series had its name, even before it was a team-based fighting game, it had its character concepts. The series has its roots in a pitch called 'Survivor', a scrolling beat-'em-up that would have united the stars of the *Fatal Fury* and *Art Of Fighting* series. Though that never came to pass, the concept of a crossover between SNK's popular characters remained, and became *The King Of Fighters '94*. The first game in the series featured plenty of characters from those two popular fighting game series, but also drew on SNK's history, with teams featuring the heroes of *Ikari Warriors* and *Psycho Soldier* too. There were even original characters – the American sports team and the heroic Japanese team, led by series protagonist Kyo Kusanagi, as well as the infamous final boss Rugal Bernstein.

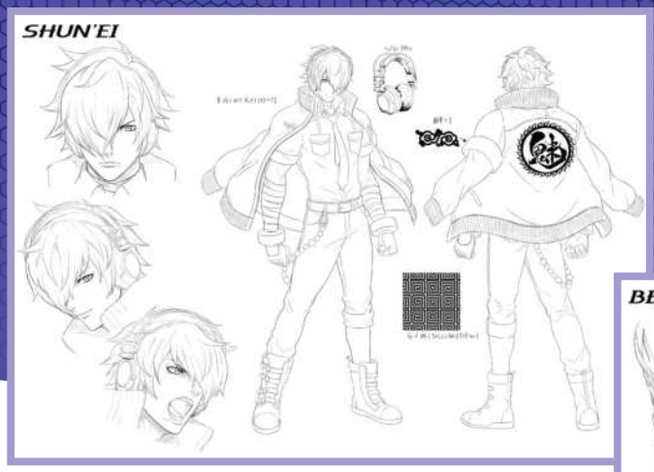
The concept was a new one for players in Japanese arcades, and according to the series' lead producer Yasuyuki Oda, "It made a huge impact with them and was pretty popular." This paved the way for sequels that expanded the concept, with new characters and crossover characters added in balance. According to Oda, "Things like action, looks, backbone, gameplay, etc are all taken into consideration," when creating or adding a new character to the roster. One of the most important early additions came in *The King Of Fighters '95*, which ditched the sports team and imported Billy Kane and Eiji Kisaragi to serve as teammates for Iori Yagami, Kyo's eternal rival. The conflict between Kyo and Iori was central to the first story of *The King Of Fighters* series, as the servants of an ancient god named Orochi attempted to remove the seal that kept it from destroying humanity. "*KOF* was a true breath of fresh air for the fighting game scene as it was truly unique and featured amazing characters," says Oda. "The lore and setting has a lot of traditional Japanese references, and though some parts may feel very foreign to people overseas, the way the story incorporates Japanese mythology like Orochi and the Three Sacred Treasures was done very well."

» Terry Bogard usually uses his classic *Fatal Fury* outfit, but did switch to his *Garou: Mark Of The Wolves* look for a while.

THE DESIGNER'S DREAM

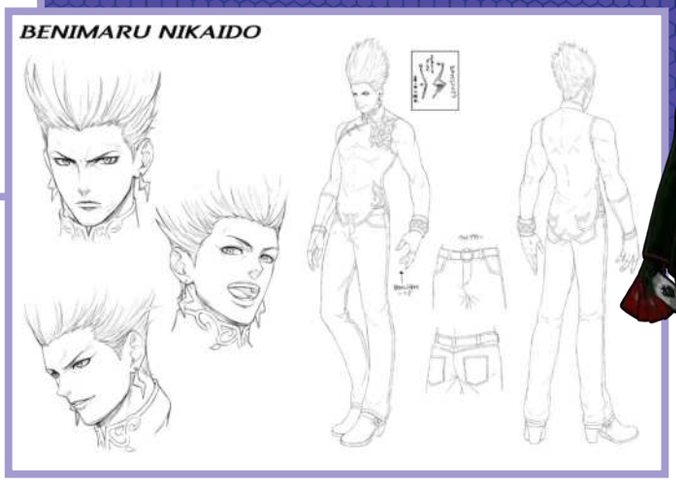
THE KING OF FIGHTERS CHARACTER THAT ENSURES SPRITE ARTISTS ARE NEVER SHORT OF WORK

Of all the characters in *The King Of Fighters*, it's fair to say that Athena receives the most design attention. Every game sees the popular face of the Psycho Soldier team redesigned, whether it's a simple shortening of her sleeves or a radical haircut, and her appearances over the years have emphasised her qualities as a pop idol, superhero and even just a regular schoolgirl. Which of her looks is your favourite?



» Shun'ei has been designated the hero of the next game, and his appearance is likely to undergo major scrutiny before release.

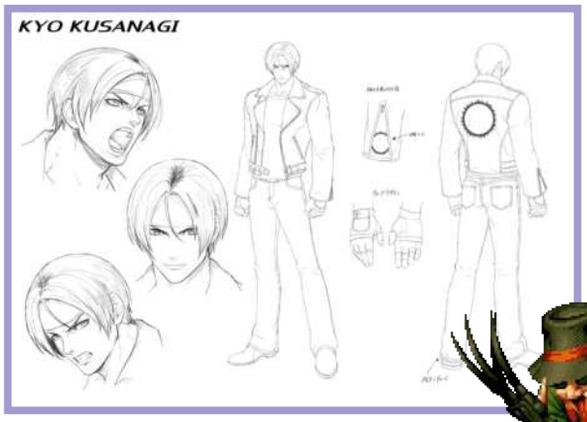
> "IN FIGHTING GAMES, EACH CHARACTER IS THEIR OWN PROTAGONIST, AND SO NOT HAVING THEM APPEAR IN THE NEXT GAME TENDS TO DISAPPOINT MANY PEOPLE."
> Yasuyuki Oda



» Benimaru's concept for the next game involves a new style taking in elements of Chinese clothing.

Starting from *The King Of Fighters '99*, a new story involving the NESTS organisation began, and focus moved to a new set of characters. Kyo and Iori were no longer available as regular characters, with the fiery K' and hulking Maxima serving as new protagonists. This story ran through to *The King Of Fighters 2001*, and saw SNK – and Eolith, during SNK's financial troubles – mainly opting to add new characters, with only Li Xiangfei flying the crossover flag. But the focus on incorporating the wider SNK world returned in the *King Of Fighters 2003*, which introduced Gato and Tizoc from *Garou: Mark Of The Wolves* as well as a brand-new protagonist, Ash Crimson. Ash's story would continue through *The King Of Fighters XI* and *XIII*, with more *Fatal Fury* series characters such as Duck King and Raiden added along the way.

For a long time, the sprites in *The King Of Fighters '96* were the basis for many fighters' ongoing appearances, but many characters were reimagined with the introduction of HD graphics in *The King Of Fighters XII*. Ultimately, the cost of producing those HD sprites caused the team to finally move to 3D for *The King Of Fighters XIV* – but getting the characters to look right was not an easy process. "We had our fair share of difficulty as 2D and 3D animation couldn't be more different. The first issue we had to resolve was finding the right 'feel' for the faces and textures," says Eisuke Ogura, the director, main illustrator and character designer of *The King Of Fighters XV*. "Another issue that presented itself was how well our animators could convey exaggerated motions, for example by increasing the size of a fist on impact to sell the attack better, in a 3D environment. In terms of costs, etc, 3D is the way to go, but there are times where a character's movements can look off. That's why it's extremely important that we go back and make sure each movement is as polished as can be."



» This early set of sketches shows the concept for Kyo's appearance in *The King Of Fighters XV*.

» Sometimes, it's possible to see where a design's inspiration comes from, as with little nightmare Choi.

Because of the series' focus on plot, and the need for real stakes, some characters were permanently killed off over the years. While SNK would provide *Dream Match* games like *The King Of Fighters '98* and *2002* in order to bring back past favourite characters, this did present something of a problem for regular instalments. "In fighting games, each character is their own protagonist, and so not having them appear in the next game tends to disappoint many people. Of course, simply saying that they died in the previous game doesn't do much to sway people's opinion," says Oda. "So, with that in mind, and considering the fact that *KOF* is a type of 'all-stars' game where SNK's best come to duke it out, where even characters that should be dead, aren't – I'm looking at you, Geese – it made sense to establish Verse [*KOFXIV*'s boss] as a means to bring others back." With Verse's time anomalies as a justification, SNK can go even further in incorporating previously unthinkable fighters like *Samurai Shodown*'s Nakoruru, without violating the series' internal logic.

» Unique new character designs like Oswald, who uses playing cards to fight, keep the series fresh.

» Ryo Sakazaki is a series mainstay, alongside his *Art Of Fighting* compatriot Robert Garcia.

AWESOME ATMOSPHERE

THE KING OF FIGHTERS GAMES HAVE LONG BEEN GREAT AT SETTING A SCENE, WITH BACKGROUND ART AND MUSIC THAT ONLY ENHANCE THE COMBAT

» [Neo Geo] The cameraman and amusement park setting show how the tournament has gone mainstream in *The King Of Fighters '97*.

» [Neo Geo] Though infrequent, cutscenes are deployed to ensure that the player is up to speed with the story.

» [PS4] SNK arcades, like the fictional Neo Geo Palace here, often serve as backdrops for your fights.

» [PS2] Background cameos are common in the series – here we can see Leona, Hinako and Bao.

A good fight depends just as much on atmosphere as it does on the combatants themselves. Let's be honest – if you had a time machine and got Muhammad Ali and Mike Tyson at their career peaks, the fight would still look comical if you held it at a Wacky Warehouse. [I'd still watch it - Ed]

No, you need a street brawl that brings traffic to a grinding halt, or a dramatic showdown on an isolated, windswept hilltop. That's why the backgrounds and musical accompaniment matter so much to *The King Of Fighters*.

It's something that Eisuke Ogura is keen to emphasise as a way to further define characters. "There are many times where just by hearing a character's theme, one can recall their playthrough with more clarity than just by visually seeing the character. It also helps the character stand out and feel more alive as the music can give what's going on in the background some real weight," he explains.

"Accurately matching the background to the track being played helps set in stone whatever emotions the player is feeling, and thus shapes their overall image of a character. That's why you can feel your heart race when listening to their theme. In a game like *The King Of Fighters* where the same characters appear many times over, this type of aspect tends to play a very important role." Yasuyuki Oda adds "For legacy characters, we try not to veer too far away from how they were portrayed in their original game." Just a quick look at the settings of the first couple of games can help you to identify with the characters, whether you're a newcomer or a veteran of SNK's previous fighting games. The Ikari team's crashed military vehicles not only show their background, but convey their ability to survive tough times. The Korean team's stark, remote training grounds emphasise Kim's hard work to rehabilitate his criminal teammates Chang and Choi. Iori's team debuts against a grimy, unkempt industrial backdrop that tells you that not only are you in the wrong part of town, but you've met the worst people possible.

Likewise, the music succeeds in its goal of aiding the character designs. The Fatal Fury team tends to have either relaxed or upbeat themes, fitting Terry Bogard's attitude of participating to enjoy the thrill of a good fight, rather than for death or glory. In *The King Of Fighters '99*, the electronic beats of *KD-0079* signify the scientific and technological nature of the villainous NESTS syndicate, compared to the supernatural nature of Orochi, and it makes for a perfect theme for the protagonists and ex-NESTS agents K' and Maxima. Sometimes, a good musical theme is just a great way to jog the memory too. The various versions of the *Psycho Soldier* theme used by Athena Asamiya and her friends, or the return and remixing of tracks like *Soy Sauce For Geese*, immediately bring to mind the games that they originated in.

» [Neo Geo] Who would fight in a place like this? Grimy surroundings match the unsavoury characters.

STAYING IN CHARACTER

A LOOK AT HOW COMMON BACKGROUND ELEMENTS ARE USED TO PROMOTE CHARACTER CONSISTENCY IN THE KING OF FIGHTERS AND BEYOND

Of course, SNK hasn't shied away from trying new things with the formula. A great one was arenas that showed distinct differences between rounds, as day turned to night, traffic moved about and rain began to pour – typically, in a stage set in England. Where else? A more controversial change came in *The King Of Fighters '97*, in which traditional background music was largely discarded, with SNK instead employing ambient background sounds to match the scene – funfair fanfares, cheering crowds and even rhythmic, ritualistic drumming. Only key characters such as Kyo, Iori, Terry and Athena were allowed to retain their theme music. But the traditional approach has prevailed over time, largely due to its usefulness in conveying the character of a particular team of fighters. And, as time has gone on, the series has built up such a range of familiar locations that a background with some good callbacks can not only help to solidify a character's image, but also help anchor the game within the same universe in the minds of the fans.

"I always have a ton of fun designing the backgrounds," says Ogura. "The thought process that goes into designing a brand-new stage or recreating a past stage with deep and meaningful references differ, but are both quite enjoyable in their own different ways." As an example of the latter, he connects the very latest game in the series to the very first *Fatal Fury* game. "For Sound Beach in *The King Of Fighters XV*, we decided to develop it based off of themes and ideas pertaining to the iconic stage from *Fatal Fury* instead of simply recreating it," he tells us. "When the day came that the stage was revealed, a lot of people recognised it immediately as Sound Beach, and so if they're happy with it, then I consider the design a success." As long as the team at SNK can tell you what the characters and their world are like without words, as they always have done, we'd consider that a success too.

FATAL FURY 2: BIG BEAR STAGE

Big Bear's background is located in the outskirts of Southtown, and shows the town as being located near Monument Valley. Bikers and truckers have come to see the fight, suggesting a rowdy crowd.

THE KING OF FIGHTERS '96: FATAL FURY TEAM STAGE

A similar town-outskirts background now has a rundown gas station, reducing the spectators and using a slow, laid-back version of Terry's *Fatal Fury 3* theme *Big Shot* to establish a relaxed feeling.

REAL BOUT FATAL FURY 2: TERRY STAGE

Bringing together elements of the previous backdrops, the long road out of town and the large truck are present, this time by a small restaurant. This time, there are no spectators at all.

THE KING OF FIGHTERS XIV: NAVAJOLAND

Bringing the previous elements together, we've got a small crowd and big trucks combined with the gas station and road out of town, and the traditional sunset to cap everything off rather nicely.

MECHANICAL MASTERY

REFUSING TO REST ON ITS LAURELS, SNK HAS CONSTANTLY TWEAKED AND REFINED THE GAME MECHANICS OF THE KING OF FIGHTERS IN SEARCH OF PUGILISTIC PERFECTION

» [Neo Geo] You can just see Shen Woo exiting the scene as his tag partner Duo Lon flies in with a kick.

» [Neo Geo] With the dodge move in place, projectiles no longer forced a block, jump or counterattack.

***The King Of Fighters* series is well known for its mechanical depth and complexity, and with good reason.** The first game alone allows an evasion move, a special designated power attack, two different ways of accessing Desperation Moves and quick dashes – both forward and backward. But the thing that made the biggest splash in 1994 was the introduction of team battles, and picking a team of fighters rather than individual characters. This provided an instant, very visible point of differentiation between *The King Of Fighters '94* and rival fighting games, and required players to consider new factors like sequencing their teams – was it better to lead with your best fighter, or save them for last? You could even call in a teammate to aid a dizzy fighter.

The feature was more than a mere novelty. "In the beginning, yes, the concept of having three-on-three team battles was new and interesting. But I believe the system that allowed for things like charging and sharing a special meter between teammates really brought the whole thing together," says Yasuyuki Oda. "The fact that a player can completely turn the tables around even at the last second means that viewers will be on the edge of their seats – which is also important." *The King Of Fighters '95* introduced the ability to build your own team, and for *The King Of Fighters '97*, the social relationships of the characters became a factor. Characters on friendly terms would always aid one another and pass on bonus Power Stocks when defeated, whereas characters that hate each other would never assist one another and actually deduct them from their incoming teammate.

One thing that didn't stick around was the power charge system, which required players to hold a button combination to increase their super gauge. "The system was originally borrowed from the *Art of Fighting* series, but was panned by many since it essentially required players to stop what they're doing to charge. So, we changed it," says Oda. *The King Of Fighters '97* introduced a more standard super gauge behaviour in Advanced mode, though Extra was still available for the purists. Still, this method of play was so associated with SNK's fighting games that it formed a key part of the SNK Groove system in *Capcom Vs SNK*.

The King Of Fighters '99 was the next big mechanical leap, introducing the Striker system. Teams could now have four characters – three to take part in active combat, and one to act as the Striker, who could be called in to assist in tough spots. *The King Of Fighters 2000* allowed each character to substitute an alternative Striker, while *2001* allowed the player to choose how many characters would fight and how many were Strikers. This era isn't so fondly remembered, though. "Well, it gave players more choices when it came to editing teams, combo variations, etc," says Oda. "However, many people felt it made the game too complex, and surely there's some frustration to be had when your bread-and-butter combos keep getting interrupted." Strikers would be axed in *The King Of Fighters 2002*, never to return.

The King Of Fighters 2003 and *XI* radically overhauled the team-battle aspect of the game, implementing a tag team system with single-round fights and instant character changes. It's an exciting system, but one that previously came with some heavy technical requirements – to maintain seamless play, the hardware needed to either hold all six characters' data in memory simultaneously, or be able to swap it out near instantly. While we haven't seen a tag team entry in the series in a while, hardware advances may change that. "Changing a character in real time no longer requires a reduction in data to achieve quick load times, and so I can imagine that more games featuring this type of system will be released in the future," says Oda.

In recent years, the team has concentrated on making *The King Of Fighters* more accessible to newcomers. "*KOF* is already complex just by the simple fact you have to use three characters. So, we try to make the controls as easy as possible to memorize," says Oda. Recognising that it's still a fairly complex series, he adds, "We also have a selection of other fighting games, like *Samurai Shodown*, which appeal to those who like their system more straightforward." *The King Of Fighters XIV* removed the Drive gauge of its predecessor, reducing the number of things the player has to keep track of, while implementing new Rush Combos – automatic attack chains accessed by repeatedly hitting the light punch button.

The continued mechanical evolution of *The King Of Fighters* has meant that plenty of favourite features have been left behind over the years, but it's all in service of creating the best experience possible – and that spirit of experimentation is probably what led to the creation of those mechanics in the first place. And that's part of what makes the series great – whether you prefer the flexible team system of *The King Of Fighters 2001* or the frantic tag battles of *The King Of Fighters XI*, it's easy to find a system that you prefer.

» [Neo Geo] Those faces represent how the characters feel about each other – Iori's always grumpy.

» [Neo Geo] Sometimes, a character's mechanical identity is at odds with their appearance – check out sumo grappler Hinako here.

» [Neo Geo] Benimaru's the Striker here, but he doesn't appear to be doing much of worth, the lazy git.

FOLLOW THE LEADER

HOW THE REST OF THE FIGHTING GAME SCENE ADOPTED THE TEAM BATTLE MODE AS A STANDARD FEATURE

With the level of competition in the fighting game scene of the mid-Nineties, fighting game developers were constantly adopting ideas from one another in a bid to ensure that their games continued to meet the evolving expectations of players. With the success of *The King Of Fighters '94* and its unique three-on-three battle format, other fighting games quickly incorporated and expanded upon the idea.

2D fighting games soon moved to true tag team action, as seen in games like *Kizuna Encounter* and *X-Men Vs Street Fighter*, so the feature actually became more prominent in 3D fighting games where true tag team action was more technically challenging to achieve. While the arcade version was a strictly one-on-one affair, *Tekken 2*'s PlayStation port featured a Team Battle mode supporting teams of up to eight characters per player. The series kept the mode ever since, and it was also added to the *Soulcalibur* series. Team fights were also the major selling point of *Virtua Fighter 3tb*, Sega's 1997 update of the flagship fighting game released the previous year, and a part of *Dead Or Alive*'s PlayStation port. Of course, none of them replicated the ability to call a teammate to assist mid-fight, nor the social relationships between teammates.

Still, other 2D fighting games did adopt the system. *Capcom Vs SNK* saw Capcom use the signature SNK style but put its own twist on the system, by assigning points to different fighters based on their relative power, and allowing you to choose one to four characters with four points. Amusingly, Capcom didn't see fit to adopt the feature in its rival *Street Fighter* series until *Ultra Street Fighter IV* was released in 2014, 20 years after *The King Of Fighters* brought it to prominence. *Mortal Kombat* was even later to the party, gaining the mode with *Mortal Kombat 11* in 2019.

BADASS BOSSES

» This evil alliance comprises the major villains of the *Fatal Fury* and *Art Of Fighting* series, recast as regular fighters.

THERE'S A REAL SENSE OF SATISFACTION TO BE HAD IN TAKING OUT A KING OF FIGHTERS BOSS, AS THEY'RE SOME OF THE FIERCEST FINAL OPPONENTS IN FIGHTING GAMES

Sometimes, a particular piece of game design will feature so prominently across a single developer's works that players come to name it after the company itself – anything from relatively simple touches like 'Sega blue skies' to the comprehensive 'Ubisoft formula' for open-world game design. In large part because of *The King Of Fighters*, SNK's signature contribution to game design is the 'SNK boss' – a final opponent who is dramatically superior to any regular character. Often, they have behaviours that completely bypass the systems other characters work within, and attacks so powerful that any pretence of fairness is simply abandoned. They are incredibly frustrating to play against, and yet they're so memorable that they have become an expected feature of the series.

The need for such strong foes came from the environment of the time. "This might catch a bit of flak, but the idea originally came about as a means to push arcade players into beating a game," says Yasuyuki Oda. "Naturally, this concept changed when we ported these games onto home consoles." It makes sense from an arcade operator's perspective – if the player is good enough to have reached that point, they've been on the machine longer than is optimal. By that point, they're invested in victory and may be more tempted to drop a few coins in to finish the game than they would be if they had failed earlier.

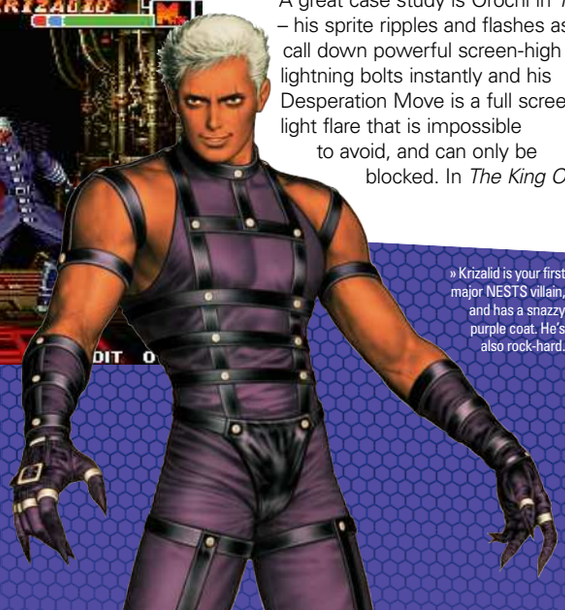
Of course, being a crossover game, *The King Of Fighters '94* could have used any of the iconic bosses from past games. Instead, SNK created a new character with the intention of being the most violent, evil boss character to date – though it did honour the crossover theme by giving Rugal the Reppuken and Kaiser Wave, moves used by the *Fatal Fury* bosses Geese Howard and Wolfgang Krauser respectively. Rugal was a boss that could believably stand up to a team of three fighters, and was so well-received that he returned in a cybernetically enhanced form for *The King Of Fighters '95*. He later showed up in *The King Of Fighters '98* and *2002*, and you would certainly be foolish to bet against the notoriously tough boss showing up again in the future.

» [Neo Geo] When characters are originally designed as bosses, the team can struggle to balance them for regular play.

The storyline had to move on, however, and new bosses have been needed for each game accordingly. This means coming up with new characters that can top past efforts, both in terms of their appearance and difficulty. Typically, SNK has chosen to do this not with size and scale, which is a common way to go, but by creating opponents of ordinary size and making them far more powerful than they would otherwise appear to be. "We tend to focus on things like having their attacks take up the whole screen, or utilizing strange special effects in order to differentiate them from standard characters," says Oda.

A great case study is Orochi in *The King Of Fighters '97* – his sprite ripples and flashes as he floats about, he can call down powerful screen-high lightning bolts instantly and his Desperation Move is a full screen light flare that is impossible to avoid, and can only be blocked. In *The King Of*

» [Neo Geo] Many bosses have two phases – Krizalid here is wearing his coat, so you can tell he's not serious yet.



» Krizalid is your first major NESTS villain, and has a snazzy purple coat. He's also rock-hard.

» [PS2] If this looks like an obnoxious, unavoidable attack, that's because it is exactly what it is.

» Goenitz is the first of the Orochi bosses you'll meet, and his mastery of wind is extraordinarily annoying to fight against.

WHAT MAKES A MONSTER

WITH FOUR APPEARANCES AS A FINAL BOSS, RUGAL IS THE MOST FEARED AND REVERED VILLAIN THE KING OF FIGHTERS HAS TO OFFER. BUT WHAT IS IT THAT MAKES HIM SUCH AN ADMIRABLE ADVERSARY?

» [Neo Geo] Omega Rugal is a nightmare for any long-term fan of the series, thanks to this jumping Genocide Cutter kick.

Fighters 2001, Igniz is distinguished by his impressively animated coat and a super move that sends a wave of screen-filling beams across the playfield. Then there's Magaki in *The King Of Fighters XI* – a character designed to be despised, whose attacks include transparent, oversized fireballs that move in arcs. In fact, his various projectile attacks were so frequent that SNK joked that it had "appropriated a design for the final boss of a new shooting game" for the character.

But while main bosses created for *The King Of Fighters* are rarely integrated into the main cast, bosses from games like *Fatal Fury* and *Art Of Fighting* have appeared as regular fighters. This most notably happened with the Boss team in *The King Of Fighters '96*, comprising Geese Howard, Wolfgang Krauser and Mr Big. Likewise, original sub-bosses from *The King Of Fighters* series sometimes join the regular cast, such as Saisyu Kusanagi, Chizuru Kagura and Kula Diamond. These characters are tricky to adjust. "Generally we take a boss's strong attacks and adjust them to a state where they're able to be properly played against, but it's tough every time," Oda explains. "In many cases, they get nerfed a bit too much."

With the move to consoles as the primary platform for the series, SNK bosses don't feel quite as brutal as in the past – Antonov and Verse in *The King Of Fighters XIV* feel like a much more reasonable challenge than the likes of Goenitz or Zero ever did. Though we've got a soft spot for Antonov in particular, only time will tell if they eventually become favourites amongst the many memorable bosses of the series. Speaking of favourites, does Oda favour any of the boss characters over the others? "Rugal, hands down," he says. "That end scene with the self-destruct switch is so iconic." Like we said – don't bet against seeing him again one day. ▶

BRAIN
Rugal is a very twisted individual, as evidenced by his collection. When he defeats a fighter, he likes to bathe their broken body in metal, encasing it as a statue for his personal amusement.

EYES
Notice that red eye there? That's a cybernetic eye, which he had to have implanted after Goenitz destroyed the one he was born with. We imagine it's probably better than a real one.

VEST
Though he's normally a snappy dresser, when Rugal's jacket comes off and the mesh vest is exposed, it signifies that he's fighting seriously. Fighters would be best advised to run far away.

ARMS
He can use these arms to throw some big projectiles. If he doesn't fancy that, he might just pick you up and ram you into a wall so hard that a spontaneous light show briefly erupts into life.

LEGS
Mostly, he likes to use these for his signature Genocide Cutter move – one of the most vicious anti-air attacks ever to appear in a fighting game, and arguably the nastiest kicking technique of all.

COMPETITIVE EDGE

THE KING OF FIGHTERS HAS GIVEN PLENTY OF JOY TO THE FIGHTING GAME TOURNAMENT SCENE — BUT HAS IT TAKEN ANYTHING FROM IT IN RETURN?

The *King Of Fighters* series has long been popular with competitive fighting gamers – just dive into the world of online video sites to find ancient VHS rips of Japanese events. Gamers are responsible for the success of *The King Of Fighters*, but the series has also allowed competitive fighting gamers like Ryan Hart to find success. His first national tournament win was on *KOF 96*, and his first world title win was on *KOF 98*. That popularity has extended globally, and the series has remained relevant long past its initial introduction, with games being played at the highest level of competition and SNK actively supporting the tournament scene.

» [PC] *The King Of Fighters '97* is popular enough amongst players that a version with online play was released for modern systems.

Back in the Nineties, part of the reason that *The King Of Fighters* series was easy to love from a competitive point of view was that the games were new every year. For an audience that had seen three years of Capcom's careful, steady evolution of *Street Fighter II* via updated versions, each annual *The King Of Fighters* release was a dream – new characters, new backgrounds, new music, the works. Having to relearn your favourite character's match-ups just felt better within the context of a whole new game. For better or worse, you also knew that your learning wouldn't be disrupted by new balance changes six months down the line.

Of course, a lot of that had to do with how the games were being made back in the Nineties. "During the days of arcade mania, SNK's schedule was extremely flexible as we were developing and manufacturing games built for hardware that was also made internally in our factories," says Oda. "Our games also didn't require different modes or localisation, and so we were able to crank out a game every year." The annual schedule had survived even SNK's bankruptcy in 2001, but was abandoned after *The King Of Fighters 2003*, with *The King Of Fighters XI* becoming the first numbered version in 2005. The series has slowed down considerably since, and SNK has now adopted balance patches and updates. "It

GET HYPE

THE KING OF FIGHTERS TOURNAMENT MATCHES THAT GOT THE CROWD AND COMMENTATORS OUT OF THEIR SEATS

SUMMER JAM 7 GRAND FINAL

NYCHRISG VS PACHUKOF

tinyurl.com/KOFcomp1

In the final match of the tournament, both players are down to their very last character. NYChrisG presses the early advantage with Benimaru and after a corner combo, takes PachuKOF's Shen Woo down to less than 10% health. In a last ditch attack, PachuKOF activates Hyper Drive with the commentator screaming "what are you doing?" – only to succeed and win the tournament.

REAL HONEST SUNDAY 6.3

HELLPOCKETS VS GEO.YUC

tinyurl.com/KOFcomp2

In round two of the losers bracket, with each player down to their last character, Hellpockets has the advantage with his Kim at over 70% life and GEO.YUC's Terry unable to even block, lest the chip damage kill him. But GEO.YUC manages to turn the whole situation around in one massive 11-hit combo with a Max Cancel finish, advancing to the next round of the event.

» [PS4] *The King Of Fighters XIV* was also featured at Evo, and hosted some high-pressure competition that was great fun to watch.

» [PC] *The King Of Fighters XIII* spent a few years as a main attraction at the prestigious Evolution Championship Series.

» [PC] *The King Of Fighters 2002: Unlimited Match* became the first game in the series to receive rollback netcode in 2020.

became simply impossible to keep that up during the console generation, where a game can go on sale across the globe simultaneously," says Oda of the annual schedule. "It's great that games can become even more polished thanks to updates, but the time it takes is certainly draining."

Because the games are so highly regarded, they have featured in the most prestigious fighting game events in the world. "The biggest event I attended was Evo. I was taken aback seeing so many people from around the world fighting and having fun," Oda tells us. *The King Of Fighters XIII* was played as a main game from 2012-2014, and *The King Of Fighters XIV* was featured in 2017. As the Neo Geo arcade hardware became cheap and easily available later in its life, the series had a greater global spread than some of its competitors, and that global impact shows today through the diversity of successful players in the competitive scene. Look over most top eight lists in the Evolution Championship Series, and more often than not you'll see a list of Japanese and American players. Not so with *The King Of Fighters*. At Evo 2012, Korean competitor Kwang-noh Lee (MadKOF) won *The King Of Fighters XIII* tournament, beating his Mexican opponent Armando 'Bala' Velázquez in the final. Other successful players over the years have come from Singapore, Taiwan, France, China and the United Arab Emirates.

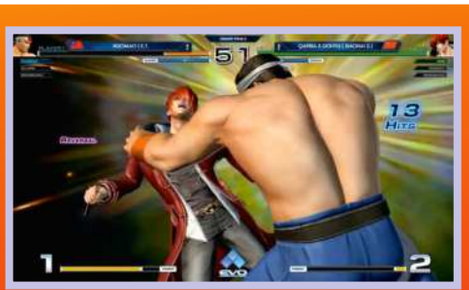
Does the amount of high-level play influence development of future games? "It's almost our policy to develop our games in a vacuum without much input from the outside, so I can't really say we do," Oda responds. "But this might change in the future." Where player preferences are considered is in the choice of older games to bring back in competitive form. Though SNK has reissued many of the series' past hits in some fashion, special attention has been paid to the competitively favoured entries. *The King Of Fighters '98: Ultimate Match* rebalanced and expanded the original game's roster in 2008, and *The King Of Fighters 2002: Unlimited Match* rebalanced and graphically overhauled that game in 2009. *The King Of Fighters '97 Global Match* was released with online matchmaking in 2018. The PC version of *The King Of Fighters 2002: Unlimited Match* was even updated to use rollback netcode in 2020, which is considered to be the gold standard by fighting game fans. Getting the netcode is important too, as the global pandemic has forced the competitive gaming world to adapt to a new situation. In fact, this has impacted all the ways in which SNK's esports support programme has worked. "Before COVID-19, there were a lot of offline events and tournaments, and so we would hand out merchandise, goods and even pot bonuses," says Oda. "But now online events have become the norm, and so we're still looking for different methods in terms of support." While the restrictions on offline gathering won't last forever, improving the online experience will surely continue to be important as time goes by.

EVO 2012

BBZ VS HAITANI

tinyurl.com/KOFcomp3

In a different kind of dramatic final-round finish, BBZ and Haitani have taken one match apiece and are both down to their final character in the deciding match – Shen Woo vs Mr Karate. In a show of overwhelming force, BBZ pushes Haitani back into the corner with relentless pressure, eventually breaking his opponent's guard to force a match-winning combo, and a perfect victory at that.

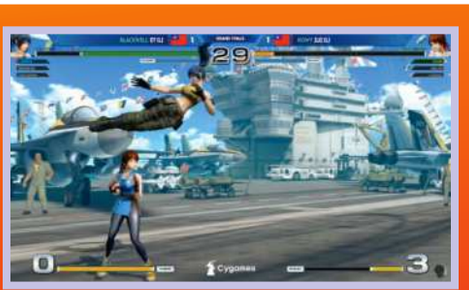


EVO 2017 GRAND FINAL

ET VS XIAOHAI

tinyurl.com/KOFcomp4

Going into the final round of this *King Of Fighters XIV* tournament, ET was on the back foot against the winner of the Evo 2014 *King Of Fighters XIII* event – he had a slight life disadvantage and was playing the low-tier character Goro Daimon. But his unconventional pick helped him to dish out big damage, including near 50% health from one command grab, and ultimately claim victory.



EVO 2018 GRAND FINAL

ET VS ZJZ

tinyurl.com/KOFcomp5

Two Taiwanese players battled it out in the finals of the Evo 2018 *King Of Fighters XIV* side event, with ET defending his title from 2017. ZJZ has pushed things to the wire, resetting the bracket and bringing the game down to a final dramatic clash between his Yuri and ET's Leona. The fast and frantic round is high-level play at its finest, so we won't spoil the winner – go watch it for yourself.

» [PS4] Chris has the advantage over Kyo. Knowing what he's all about, that could be trouble for humanity.

» [PS4] Shun'ei is the hero of the latest game, though we don't know who the major villain is yet.

» [PS4] Teammates Chris and Shermie face off for what you'd assume would be a friendly battle.

» [PS4] The returning villain Chris uses his speed to outmanoeuvre Team Hero member Meitenkun.

» [PS4] K' looks just as cool as he ever did, and remains the hot-headed scrapper he always was.

» [PS4] Leona's not really the sort of person we'd see having fun at Sound Beach.

» [PS4] Mai's back after her guest stint in the *Dead Or Alive* series, and looking ready for action.

KOF XV
THE KING OF FIGHTERS

FORWARD THINKING

WHAT DOES THE FUTURE HOLD FOR THE KING OF FIGHTERS? WE SPEAK TO YASUYUKI ODA ABOUT THE NEXT GAME IN THE SERIES, THE KING OF FIGHTERS XV

For fans that have been following *The King Of Fighters* since the Neo Geo days, the extended wait between new entries in *The King Of Fighters* series must be agonising. *The King Of Fighters XV* was first mentioned at an SNK investor's conference in 2018, with the aim of a 2020 release, and the game was officially announced with a logo reveal at the Evolution Championship Series in 2019. The game was pushed to 2021, with character reveals and more beginning at the start of the year, but by June the game had been delayed to 2022 with SNK citing difficulties in developing the game during the COVID-19 pandemic.

So what do we know about *The King Of Fighters XV* so far? Where the plot is concerned, the game's producer Yasuyuki Oda is keeping his cards close to his chest. "All I can say right now is that it continues after *The King Of Fighters XIV*, and that Shun'ei is the main protagonist," he says. How about characters? "Well, Yashiro Nanakase's reveal made a huge splash, but we have many more surprises on the way so look forward to it!" While Oda isn't giving too much away there, the fact that Yashiro was revealed at all is telling in itself.

To date, Yashiro, Shermie and Chris are three of the four revealed characters that didn't appear in *The King Of Fighters XIV*. It's the first time we've seen Team Orochi outside of *Dream Match* games since their debut in *The King Of Fighters '97*, and they died during the events of that game. So it's safe to assume that their return has something to do with Verse, the time-warping final boss of *The King Of Fighters XIV*. The other returning character that wasn't in *The King Of Fighters XIV* is Chizuru Kagura, who will be teaming up with Kyo and Iori. Given that those two are mortal enemies, but that the three of them together were instrumental in sealing away Orochi before, it's a good bet that the newly revived villains will play a key role in the plot.

But what of the gameplay side of things? So far, there's not a lot to go on from the trailers that have been released, but thankfully Oda is a little more willing to talk about this. "Well first off, we put effort into not letting all the training *KOF XIV* players put into improving their techniques go to waste, while also providing them with a fun challenge," he says. "The story has really ramped up, while the fights will be even crazier than before. There's more I want to talk about but please wait for further announcements." One feature that has been requested by fans across the world is rollback netcode, and it's one that Oda is happy to confirm. "Right now, it's currently being implemented. However, this is extremely difficult and takes a ton of time. We're doing our very best, so your support means a lot to us."

What's clear from the early footage and images is that The *King Of Fighters XV* looks to be the most visually impressive 3D game from SNK to date, highlighting the team's growing confidence in moving away from the 2D roots of the series. However, a lot remains to be seen. All of the characters revealed so far are returning fighters from past games in the series, so we don't know anything about any new fighters or what their roles may be. The size of the game's character roster is also unknown, though we'd guess that it's quite large as usual, in order to facilitate varied three-on-three battles. Mechanics are wholly unconfirmed, so we can't rule anything out – we could see the return of the divisive Rush Combos, but they could well be gone.

One thing that you should expect, though, is that the game will be built to last. "We're developing this game to be played for many years to come. Of course, that comes with the commitment to support such an endeavour," says Oda. SNK has already demonstrated this model of long-term support a couple of times – *The King Of Fighters XIV* received not only additional DLC characters, but patches to improve online performance and graphics. Then there's the latest *Samurai Shodown* game, which is currently receiving its third batch of DLC two years after the game was originally released.

While it's unfortunate to see the game delayed as it has been, *The King Of Fighters XV* is an exciting prospect that has the potential to boost the series' prominence in both the competitive scene and the public consciousness. The wait may be agonising, but hopefully the final game will show exactly how well SNK's time has been spent. In the meantime, we look forward to learning more about it. ✱

WHO'S IN?

SO FAR, 22 FIGHTERS HAVE BEEN CONFIRMED FOR THE GAME – HERE'S THE CAST AS IT CURRENTLY STANDS

Team Hero
Shun'ei
Meitenkun
Benimaru Nikaido

Team Sacred Treasures
Kyo Kusanagi
Iori Yagami
Chizuru Kagura

Team Fatal Fury
Terry Bogard
Andy Bogard
Joe Higashi

Team Orochi
Yashiro Nanakase
Shermie
Chris

Team Art Of Fighting
Ryo Sakazaki
Robert Garcia
King

Team Ikari
Ralf Jones
Clark Still
Leona

Plus...
Mai Shiranui
Yuri Sakazaki
Blue Mary
K'

INSIDE THE NINTEN

FOR A TIME IN THE LATE-NINETIES, NINTENDO BOASTED OF HAVING "THE FASTEST, MOST POWERFUL GAMES CONSOLE IN THE WORLD", AND REVOLUTIONARY 3D GAMES TO RUN ON IT. BUT WHAT MADE THIS POWERHOUSE TICK? WITH THE HELP OF VETERAN DEVELOPERS, WE DELVE INTO THE MACHINE TO FIND OUT

WORDS BY NICK THORPE

In 1993, Nintendo was a company in an interesting position. While it was undoubtedly a leader in the videogame console market, it could no longer boast the virtual monopoly it held during the late-Eighties. What's more, the industry was already planning to transition away from the 16-bit console market, and rival manufacturers were beginning to show their hands. NEC had experienced success in Japan with the PC Engine, and had already shown off the 32-bit Tetsujin, while Atari had announced the Jaguar in August 1993 and was gearing up for a holiday test launch. The much vaunted 3DO, from former Electronic Arts executive Trip Hawkins, was also scheduled to launch for the holiday season and had the backing of electronics giant Panasonic.

Nintendo wasn't particularly concerned with most of these companies – at the time, Sega was its biggest rival, having been the first company to bring serious competition to the console market. As the two biggest players in the console market, either of them could have been behind what ultimately became the Nintendo 64. The hardware was primarily engineered by Silicon Graphics, Inc, a huge name in movie special effects technology which had recently bought MIPS Technologies, the designer of the CPUs used in its workstations. Having developed a low cost, power-efficient version of the latest MIPS processors, SGI put together a design proposal for a games console. In September 1993, the rivals had signed the contracts and made their announcements – Nintendo would partner with SGI and launch its 64-bit home console in late-1995, while Sega would use Hitachi's 32-bit processors and launch in the autumn of 1994. Sony, Nintendo's former partner on the SNES CD-ROM project, announced its intention to launch a home console of its own the following month.

Being the last to market wasn't an unfamiliar situation for Nintendo, as it had done the same with the SNES and been able to retain a substantial market share regardless. The tactic here was the same – simply put, Nintendo bet on having the best technology. Project Reality, as it soon became known, was also an easy machine to hype. With SGI on board, *Nintendo Magazine System* claimed that the machine had "the potential to provide graphic images such as those seen in *Abyss*, *Jurassic Park* and *Terminator 2*". At a time when more bits was better, being a 64-bit machine was a big deal. *Total* emphasised that "[Sega's] next generation machine, Saturn, is a 32-bit console – fairly powerful, but nowhere near as fast as the Silicon Graphics hardware". By the time the console had received its Ultra 64 name in 1994, Nintendo had decided on an extensive advance marketing strategy, working with Midway to create Ultra 64 branded arcade games and taking out advertising to encourage players to wait for the console. They needed plenty of patience, as the Nintendo 64 was delayed repeatedly prior to its Japanese release in June 1996. "It's hard to do hardware full stop, and this was a totally new platform – new chipset, new CPU, new GPU. On top of that, we were trying to make a flagship *Mario* game," says Giles Goddard, a programmer working for Nintendo at that time. "They just wanted to get it right – there was no particular big problem that happened that caused a delay or anything."

While working on the planned launch game *Star Wars: Shadows Of The Empire*, Eric Johnston had a privileged ▶

» [N64] Giles Goddard was able to create an animation system for *1080° Snowboarding* that moved between motions smoothly.

DO 64®

» [N64] We can only imagine how *Star Wars Episode I: Racer* would have run with the 2MB RAM originally proposed.

» [N64] If used over too large an area, bilinear interpolation can make textures look blurry and indistinct.

» [N64] Games like *Banjo-Kazooie* featured large 3D worlds that other consoles struggled to replicate.

NINTENDO 64

Inside The INTERVIEWEES

JES BICKHAM
Reviews editor – *N64 Magazine*

ED BRYAN
Artist – *Banjo-Kazooie, Banjo-Tooie*

MATT FURNISS
Musician – *Cruis'n Exotica, Excitebike 64*

CHRIS SUTHERLAND
Programmer – *Banjo-Kazooie, Banjo-Tooie*

STEVE MAYLES
Artist – *Banjo-Kazooie, Banjo-Tooie*

LEE SCHUNEMAN
Director – *Diddy Kong Racing, Dinosaur Planet*

ERIC JOHNSTON
Technical/project leader – *Star Wars: Shadows Of The Empire, Star Wars Episode I: Racer*

MARK STEVENSON
Artist – *Donkey Kong 64*

AMIR LATIF
Programmer – *Wetrix, Mario Artist: Paint Studio*

GILES GODDARD
Programmer – *Super Mario 64, 1080° Snowboarding*

[N64] Lee Schuneman and the *Diddy Kong Racing* team had ideas first and worried about hardware limitations later.

position in seeing the system take shape. "I loved the N64 hardware. Mark Blattel and I had a desk at SGI during its development, running it through its paces as it progressed. At the time, the only machine we could simulate it on was a $250,000 SGI Onyx, which was a purple and black box the size of a small desk, which required its own 16-amp power outlet," he tells us. Giles also remembers this setup. "There were changes all the time basically, we rarely saw actual hardware. There were two levels of emulation – the API side emulation where you could recompile your game to run on SGI hardware natively, with very little changes to your code you could run either the native one or build it for the emulator. Most of the time we were developing on the native version of the game, and then occasionally we'd recompile it for the Onyx to see if it still worked in the same way. We rarely saw actual N64 devices."

The CPU was quite powerful for its day, with a high clock speed of 93.75MHz for a performance of 125 million instructions per second – for comparison, the PlayStation does around 30 MIPS. But did the ability to use 64-bit processing actually provide any practical advantages? "Almost none, I would say," says Giles. "I'd say it was more of a marketing thing than anything actually usable. A float is 32 bits and a double float is 64 bits, and you don't need double floats to do any kind of 3D maths usually, especially back then. All games ran in 32-bit mode. 32 bits is what, 4GB of memory? This thing only had 4MB," he explains. "From memory, I think the 64 bits was more marketing spiel than anything else," concurs Amir Latif. "It certainly didn't have a huge amount of RAM to access and the memory bus certainly wasn't that wide. There was a 32-bit mode and a 64-bit mode, but in reality we never really touched the 64-bit mode as there were other knock-on effects (for example, pointers become eight bytes instead of four)."

"There were lots of new things that were being thrown at us that we had to familiarise ourselves with," says Chris Sutherland. "We were previously used to coding things in assembly language, so depending on the processor we were using, whether it was for the Game Boy, the NES or the SNES we'd be familiarising ourselves with that processor. So I suppose it was a bit of a leap in terms of moving from assembly language to C, where we were programming on a higher level language. There were lots of things to consider there, and lots of new things to learn," he explains. "There was a move to three dimensions as well, which is something that we weren't familiar with, learning things with cameras and things like that. We were also using different machines, so previously we would be using PCs to develop with, and now we were using these Silicon Graphics Indys which didn't run Windows, but they ran a version of a Unix-style operating system."

One unique thing about the N64 was the Reality Co-Processor, or the RCP. Although this chip handled the console's graphical functions, that wasn't its only task – it was also used for audio and input/output operations. The RCP could be reconfigured towards different performance profiles using custom microcode, and it had plenty of hardware features that were key to the N64's distinct look. "In particular, I liked having built-in Z-buffer, trilinear mipmapping and floating point. Today, few 3D game developers would even *consider* going without these, but at the time they were new, and didn't exist on other platforms at all, even expensive home PCs," says Eric. "If you run N64 games side by side with other

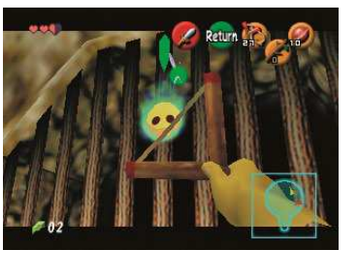
FRANCHISE FORWARD

SUPER MARIO 64

■ Nintendo did away with the largely linear obstacle courses of past games and came up with an incredible new template for Mario, creating 3D spaces that each felt like self-contained playgrounds. Each stage featured multiple goals due to the various Power Stars on offer, maximising the need to explore all of them thoroughly.

MARIO KART 64

■ Freed from the flat tracks necessitated by the Mode 7 feature of the SNES, Nintendo was able to introduce courses with bumps and jumps, as well as more creative hazards including boulders tumbling down cliffs. Even Battle Mode benefitted, with Green Shells being far more lethal at the lower levels of Block Fortress than the top.



ZELDA: OCARINA OF TIME

■ Combat in 2D *Zelda* games had to compensate for the player's four directions of movement, but 3D had to replace the reliable top-down viewpoint. The genius Z-targeting system allowed players to lock the camera to a single enemy and move relative to it, while you could see through Link's eyes to aim both the slingshot and the bow.

STAR FOX 64

■ *Star Fox 64* offered few gigantic gameplay innovations, due to the fact that its predecessor was one of the rare 3D games for the SNES. What it did have was a massive increase in graphical detail, environmental complexity and framerate, as well as a good use for the controller expansion port with the introduction of the Rumble Pak.

contemporary platforms, you definitely notice the difference visually." Amir also remembers this visual difference. "In terms of pixel fidelity, the N64 had fairly cutting-edge features, especially compared to its PlayStation peer. Z-buffering, anti-aliasing, bilinear interpolation texturing, perspective corrected texturing, mipmap texturing, environment mapping, fog, all of these features were missing from its competitors. Unfortunately, they also came at a heavy price and the N64 really struggled to throw around too many triangles, especially with some of those heavier effects turned on."

Rare struggled with the performance balance in its early work with the machine. "There were all kinds of convoluted systems that we had to try and not use that Z-buffer, so it was sorting by object and all this kind of stuff, which always works to 80% but then there's the 20% where things draw in the wrong order. There were all kinds of things we tried to mitigate that, but in the end we settled on 'let's use the Z-buffer,'" Ed Bryan recalls. "The Z-buffer was seen as extremely expensive in terms of framerate, but you couldn't do without it as we found out," adds Steve Mayles. "But this wasn't on *Banjo*, this was when we were doing the *Dream* game," he says, referring to the precursor to *Banjo-Kazooie*. "You'd be walking across a bridge and it would all look great, then you'd move the camera slightly and then this massive thing would pop in front of everyone."

Despite being industry leaders in 3D art thanks to games like *Donkey Kong Country* and *Killer Instinct*, Rare's artists also found that they needed to learn a new way of working for the new console. "With NURBS, the way we did the 3D for *Donkey Kong Country*, it was completely different to polygons so it was really another world of 3D with the triangles and the vertices," says Steve. "There were more rules to follow really, because it was real-time. With the NURBS, you were making it and rendering it out, and at that point it didn't really matter what it looked like in the package, but with the polygons everything had to be done exactly right, or else it'd go into the game and it'd all go wrong." However, the NURBS experience didn't go to waste, as it was used to create textures – though they were their own challenge. "Colouring everything a vertex at a time, texturing everything a triangle at a time – it was a very different world to what it is now," says Ed. "We opted for as few textures on the characters as possible," he remembers. "Which actually works well in retrospect, because if you have that shading, then if you have a modern version which upscales it, it looks kind of neat still, whereas if you have a texture it just gets really blurred out," Chris adds.

The system's approach to memory followed a similarly flexible model to the co-processor. Previous consoles had allocated various pools of RAM to different tasks – main memory, video and audio. The N64 used a unified memory architecture, allowing developers to distribute the system's 4MB memory between tasks as they saw fit. "Up until that point everybody had to deal with banks and DMA memory between banks, and that was a real pain to do that kind of stuff. Now we had basically everything under one roof, which was just fantastic," says Giles. "You basically had three areas. You had the ROM, you had the RAM, and then you had the graphics memory – and when I say memory I mean texture memory and vertex memory. So you still had a graphics part of the memory that was separate – it was on-chip cache, but it was great to have everything in RAM – you could access anything, anywhere, without having to worry about what area it was. That was one of the big attractions

HOW EXISTING GAMING SERIES ADJUSTED TO THE NEW POSSIBILITIES OF THE N64

POKÉMON STADIUM

As great as the handheld *Pokémon* games were, the battles didn't look hugely impressive to kids that had been hooked on the anime series. *Pokémon Stadium*'s 3D renditions of the popular critters were imported from your Game Boy cart and had all the charm of their cartoon counterparts, plus some dramatic attack animations to match.

GOLDENEYE 007

Prior *Bond* games had hardly been classics, so Rare's shooter was a revelation. The first-person 3D action allowed players to mentally slip into the super spy's tuxedo, while the four control ports allowed you and your friends to see who'd win between Jaws, Oddjob, Baron Samedi and May Day. Spoiler: it's Oddjob, 90% of the time.

DONKEY KONG 64

Although they were finally gifted with a 3D world to go with their 3D appearance, the Kong clan's most noticeable upgrade of the N64 era arguably came in the audio department. There's no way the *DK Rap* would sound the same coming out of a SNES, and it's definitely something you'll never be able to forget once you've heard it.

NINTENDO 64

Inside The

THE OTHER N64S

WHAT'S THE TRUTH BEHIND THE ARCADE ULTRA 64 GAMES?

If you were a regular arcade visitor in the mid-Nineties, it's very likely that your first glimpse of the eagerly anticipated Ultra 64 took place there. Rare's *Killer Instinct* and Midway's *Cruis'n USA* were both released in 1994, and each game proudly trumpeted the fact that it ran on the technology that would power Nintendo's new console. Just a few years earlier, the Neo Geo had been arcade perfect but prohibitively expensive – could it really be true that this cutting-edge arcade hardware would be coming home at an affordable price?

To put it bluntly, no. Despite sporting some prominent Ultra 64 branding in its attract mode as well as Nintendo logos elsewhere, the Midway V-Unit hardware that ran *Cruis'n USA* employed a Texas Instruments CPU and a custom 3D chip, and essentially bears no resemblance to the console that SGI would produce for Nintendo. This was actually public knowledge soon after the game was launched, too – *GamePro*'s December 1994 issue reported "according to NOA, *Cruis'n USA* was actually programmed by Williams Entertainment before Ultra 64 development tools were available". While the eventual N64 conversion does look fairly similar in many ways, it suffers from a lower resolution and less stable framerate.

That same issue of *GamePro* noted that the only developer in the world with Ultra 64 development tools was Rare. *Killer Instinct*'s attract mode claimed that it would be "available for your home in 1995, only on Nintendo Ultra 64", but this also proved to be somewhat wide of the mark. In this case though, there was a little more truth to the claims. *Killer Instinct*'s arcade board did employ a MIPS R4600 CPU, a relative of the R4300i used in the N64. However, it didn't have anything like the N64's RCP co-processor, and it used a hard disk – something the home machine never had access to. The game was converted to the SNES and Game Boy due to the late arrival of the N64, and *Killer Instinct 2* arrived in the arcades before *Killer Instinct Gold* finally arrived on the N64 in 1997.

for that kind of architecture." Although the N64's memory architecture was not especially fast, Giles doesn't recall this being an issue. "It was more the size of the caches that was the problem, they were quite small. It was 4K for the textures and I think something really stupid like 16 vertices. That's where triangle stripping and all these sort of clever ways of getting the most amount of triangles out of fewer vertices was really important."

Another unusual aspect of the RAM was the ninth bit reserved for graphical functions – something Eric was keen to exploit in other ways. "You might know that the original in-development architecture was only 2 or 2.5MB RAM, all 9-bit DRAM. The CPU only had access to it as eight bits per byte, so I wrote a sketchy driver to (at some hiccup cost) use the ninth bit as extra memory. I mean hey, that's an extra 280K or so, minus what the frame buffers need – enough for some cached textures or sounds," he explains. "I proudly showed it off to Acorn, a super-cool ace developer at Nintendo. Some time later, after they'd upped the memory to 4MB I got an email saying you're welcome and *pleeease* don't use the ninth bit hack job in a shipping game." Though Eric's hack never saw the light of day, it was possibly for the best. "The RCP made really nice use of the ninth bit though, for extra Z-buffer resolution and 5553 RGB+ coverage for their clever and imperfect anti-aliasing, in a world where supersampling wasn't an option," he tells us.

» [N64] Giles Goddard put together Mario's interactive face in about two months. For many, its impact lasted far longer.

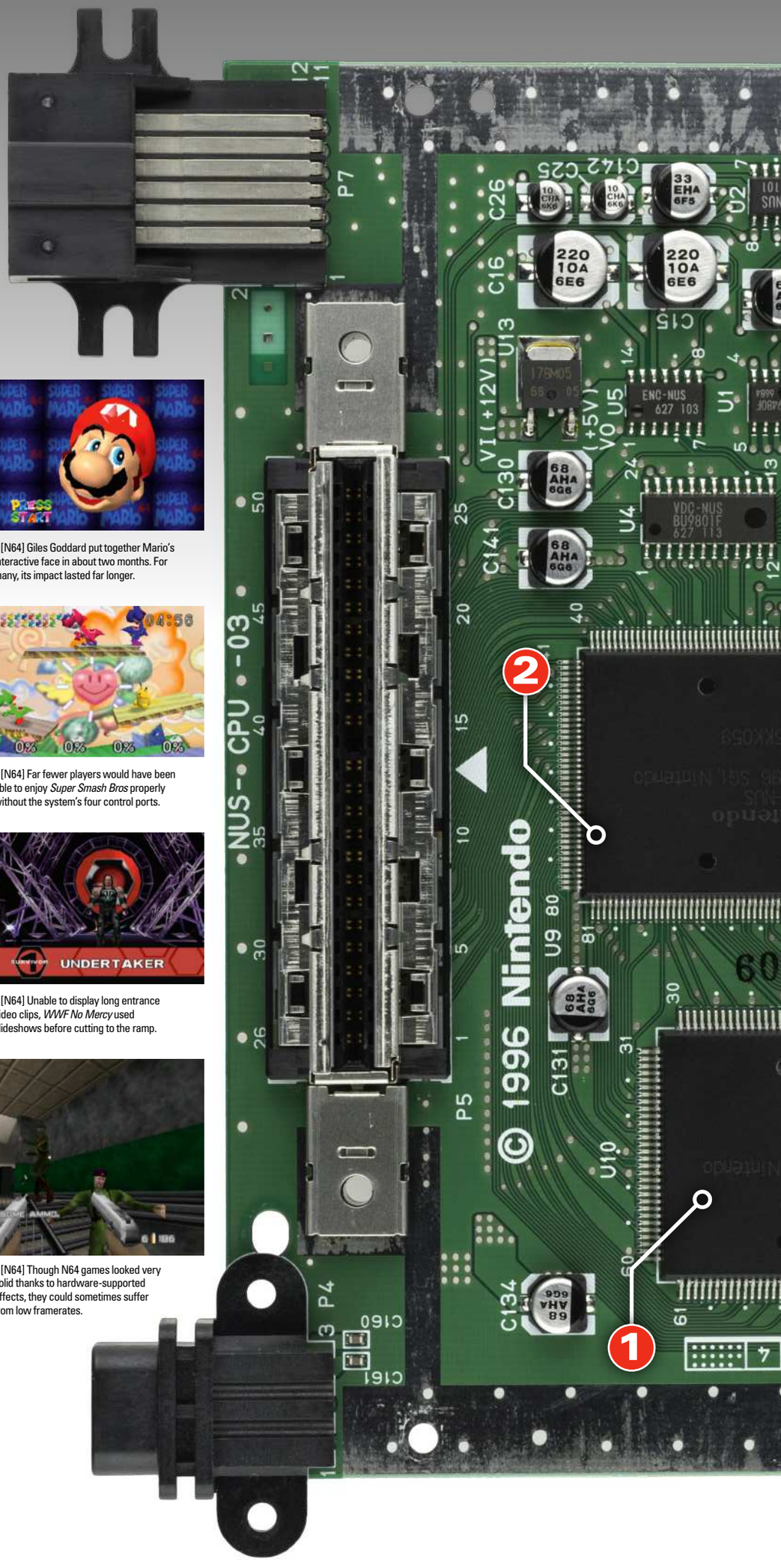
» [N64] Far fewer players would have been able to enjoy *Super Smash Bros* properly without the system's four control ports.

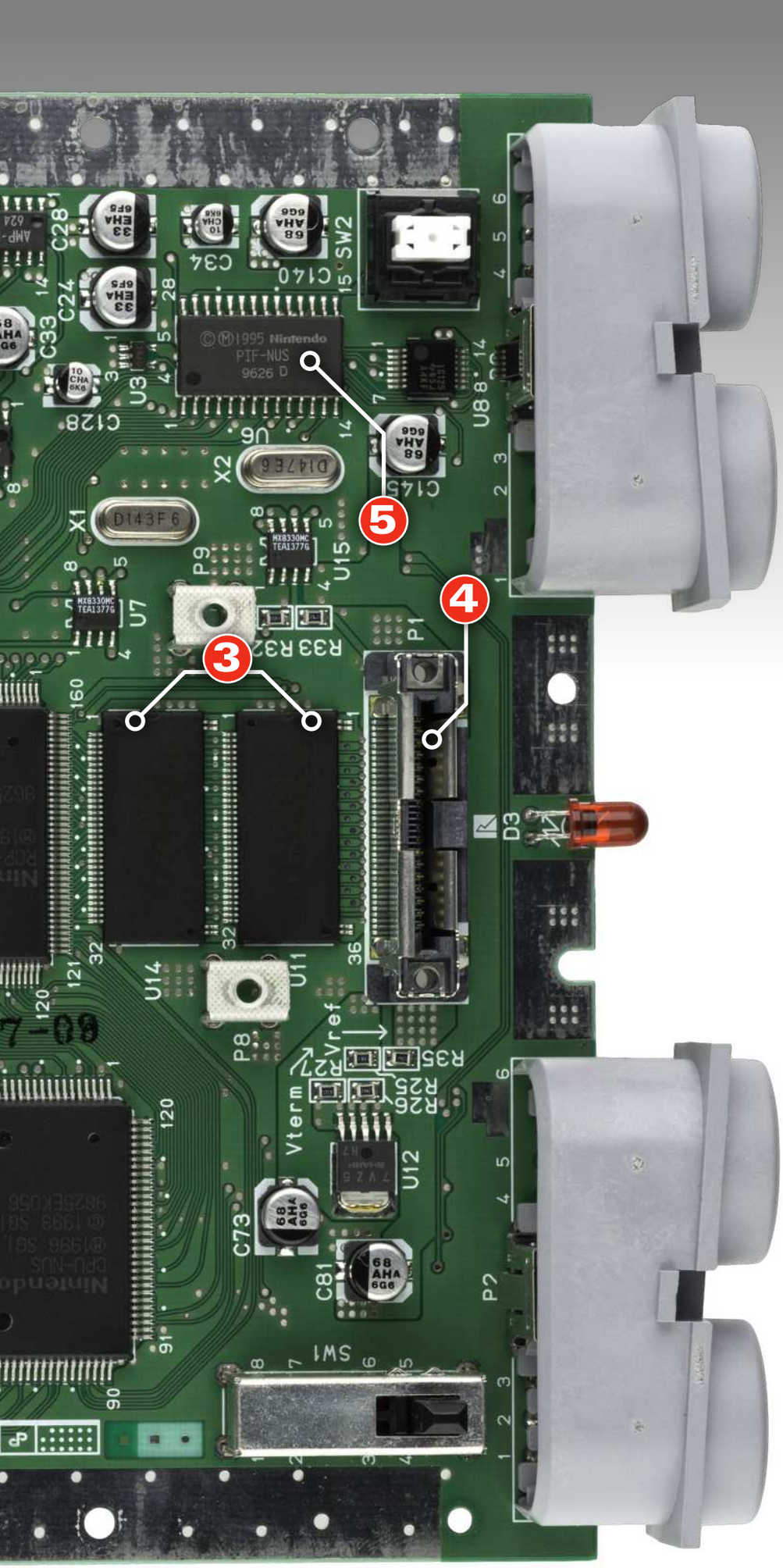
» [N64] Unable to display long entrance video clips, *WWF No Mercy* used slideshows before cutting to the ramp.

When it came to sound, the N64 used the CPU and RCP to play back sound samples. While it offered a major jump over what was possible on the SNES, it had some major disadvantages compared to its competitors. "N64 has more RAM available for the audio processor, and it can load data much faster from ROM than a PlayStation can from CD," explains veteran videogame musician Matt Furniss. "Most PlayStation games had CD soundtracks leaving all the available audio RAM for sound effects, whereas N64 had to generate both music *and* sound effects. So in the end PlayStation sounds better – more sound effects, higher sample rates. But N64 music could be more dynamic and seamlessly change during gameplay." The flexibility of the system allowed for a variety of approaches. "*Cruis'n Exotica* uses very large single-channel samples, compressed down from the original arcade game. For *Excitebike 64* we used dual-channel audio stems which would allow a little more variety in each song," Matt explains. However, he was rather fortunate to be able to do so. "Both games I worked on had large cartridge ROMs. Enough space to store all the music and effects at a sample rate and compression which sounded decent." When asked how much space that took, he draws a blank, but tells us "it must have been more than most games, it was unusual to handle the music as we did".

» [N64] Though N64 games looked very solid thanks to hardware-supported effects, they could sometimes suffer from low framerates.

Even then, large samples could only take you so far – for example, *Tony Hawk's Pro Skater 2* on the N64 has a reduced selection of songs, each





NINTENDO 64

Inside The

UNDER THE HOOD

A CLOSER LOOK AT THE N64 MOTHERBOARD

CPU-NUS

1 This is the N64's CPU, a MIPS R4300i clocked at 93.75 MHz. It uses the MIPS III architecture and is capable of performing both 32-bit and 64-bit operations. There is also a floating point unit included as part of the chip.

RCP-NUS

2 This is the Reality Co-Processor, which contains the Reality Signal Processor and Reality Display Processor. It is primarily responsible for producing the graphics and sound of N64 games. It also handles input/output operations.

RDRAM

3 The system's memory, totalling 4.5MB and connected to the RCP via a 9-bit bus. Most of the system cannot access the last 512KB, with the ninth bit only accessible by the GPU for purposes such as extra Z-buffer resolution.

RAM EXPANSION PORT

4 By default, a Jumper Pak is fitted here to terminate the RAM bus, but an additional 4.5MB RDRAM can be added via the Expansion Pak. If neither unit is present, the system will completely fail to boot, showing a blank screen.

PIF-NUS

5 The Peripheral Interface is attached to the RCP and handles inputs from controllers and connected accessories. It is also the chip that communicates with the CIC security chip in each cartridge for piracy prevention and region locking.

DOWN TO THE WIRE

BREAKING DOWN GRAPHICAL ELEMENTS OF A FAMOUS N64 SCENE

BEHIND THE DOORS

1 There's nothing visible behind the doors, because each room is loaded only when Mario is within touching distance – useful for keeping RAM usage in check. These extra images (below right) show just how close he needs to get.

RAILING

2 This decorative feature is a great example of doing a lot with a little – it's drawn using just two triangles and a 32x32 texture, repeated across the entire length of them. It looks detailed but uses few resources.

SUN TEXTURE

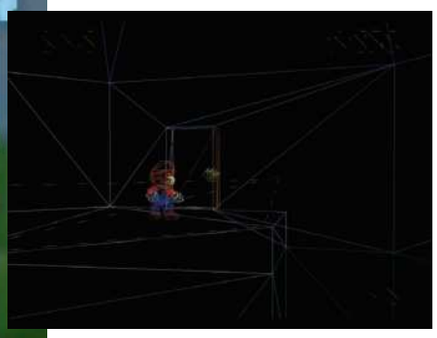
3 In the wireframe model, you can see that this is made up of eight triangles arranged into a square shape. The texture is symmetrical, so only a quarter of it is stored, and the rest is drawn by flipping and mirroring it.

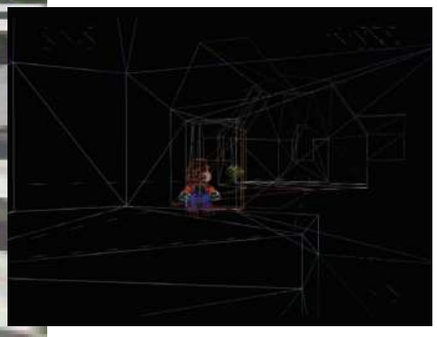
COIN

4 Fully modelled coins would be a waste of resources, so they're represented with pre-rendered sprites. The texture is stored in greyscale, and is coloured as the game needs to represent Yellow, Red and Blue Coins.

MARIO'S BODY

5 Our hero gets the most generous polygon count in the scene, comfortably exceeding anything else. Most of his model is made up of simple shaded polygons, but his eyes, hair or clothing details are added as textures.





of which are formed of long repeating samples. More commonly, developers would construct music from short samples of instruments, as was done on the SNES – *Resident Evil 2* does this. But the use of cartridges was a problem for more than sound. The CD-ROMs adopted by Sony and Sega had the downside of slow loading and being easier to copy, but allowed for plenty of presentational fluff such as FMV sequences and extensive voice acting. Some developers, most notably Squaresoft, found that sticking with ROM cartridges simply represented too great a constraint on their ambitions, and moved to rival platforms. Other publishers were attracted by the low manufacturing cost of CDs, allowing them to manufacture games at less financial risk, as well as potentially offering them at a lower price.

» [N64] *Excitebike 64*'s music was atypical in its use of the N64's audio capabilities, according to Matt Furniss.

Beyond the console's internals, innovation was extended to the interface of the system. The console came with four control ports as standard, making larger multiplayer games the norm – a simple change that made classics of games like *GoldenEye 007* and *Mario Kart 64*. More radical was its unusual, three-pronged controller. The central analogue thumbstick provided fine control over direction and speed of movement, while the quartet of C-buttons was designed for 3D camera control and the Z trigger provided a substitute for L/R depending on your grip. "Having had the privilege to work very closely with key Nintendo leaders, I got to learn from them and understand their focus on playful and surprising interactions and then the functional and simple way the hardware enables it," says Lee Schuneman. "It's a controller designed with both an eye to the future (3D) and connection to the past (2D) with an understanding that players and developers need time to get used to the change that was coming as 3D worlds became the norm. The reality is that the concepts from it remain to this day in *all* controllers. I always like that Nintendo walk their own path and design hardware to enable the games, not the other way around. It's never tech for tech's sake."

Of course, for all of its technical grunt, the N64 was defined as much by the talent of those developing for it as the system specifications. The special effects of *Super Mario 64* that made the console look a step ahead of anything else were as much a showcase of ingenuity as technology. "I think a lot of the stuff we were doing was made to highlight the hardware – it wouldn't look the same on a PlayStation," says Giles. "It was Nintendo, so they obviously had a lot of know-how, a lot of willingness to experiment with ideas without having to worry about going over budget too much. It was a bit of both – the artists at Nintendo are amazing, the programmers are amazing. It was the combination of having great hardware and a great team."

"I have never approached any game development thinking about the hardware, it's always what's the idea and let's do everything we can to make it real," says Lee. "Of course along the way you discover things that maybe you can or can't do but then you find a solution around it! Rare was (and I'm sure still is) full of great software engineers who were never satisfied with any limitation, so hardware weaknesses were never a problem and just something to work around." Mostly, he remembers the people over the hardware. "The amount of world-class game designers (Miyamoto, Iwata, Ken Lobb, all the Rare founders) that I got to interact with over those N64 years was pretty amazing in hindsight, and even a prerelease *Ocarina Of Time* to learn from."

As the N64 aged, there were a couple of attempts at expanding its capabilities. The 64DD was a disk drive that used proprietary magnetic disks with a 64MB capacity and some capability to save data. This was actually first shown to the public at the Shoshinkai show in 1996, but was heavily delayed, with little information revealed to the public. According to Amir, who was working on *Mario Artist: Paint Studio* at Software Creations, it wasn't just the public that were left in the dark. "I actually left the project to help start ZedTwo and work on *Wetrix* before *Mario Artist* was finished," he explains. "That project brings back a lot of mixed memories – it just went on for so long, and at various times

» [N64] As much as the N64 was a hotbed of innovation, some of its best games were just established ideas done really well.

» [N64] Even with the Expansion Pak, the ambitious *Dinosaur Planet* would have been too much for the N64.

» [N64] This area of *Donkey Kong 64* uses dynamic lighting, relating to the clever use of the Expansion Pak described by Mark Stevenson.

» [N64] Bilinear filtering helped to avoid the blockiness seen with close-up enemies in first-person shooters on other hardware.

» [N64] Only a few games required the Expansion Pak, so as not to split the user base into haves and have-nots.

» [N64] Pre-rendered objects on real-time 3D assets was a fairly common look in N64 games.

it didn't feel like it was ever going to come out. During my time on the project, some three to four years, we never even saw prototype 64DD devkits." The device finally arrived in Japan in December 1999, and received very little support, with *Doshin The Giant*, *F-Zero X Expansion Kit* and *SimCity 64* being its most notable games.

However, the 64DD came bundled with something that wound up being far more important – the Expansion Pak. This plug-in module doubled the RAM of the console, and was supported by dozens of cartridge games. Most games used this to offer high resolution modes, but some such as *San Francisco Rush 2049* included exclusive gameplay content such as extra stages. The most ambitious three were *Donkey Kong 64*, *Perfect Dark* and *The Legend Of Zelda: Majora's Mask*, which all required the Expansion Pak. Mark Stevenson remembers it being beneficial in terms of standard things like level size in *Donkey Kong 64*, but there were also more creative uses. "One thing I remember that we did use it for was that we had a lot of dynamic lighting in there, which was hard to do and expensive," he recalls. "One of the engineers wrote a system whereby you'd go into a cave area, and there'd be a swinging light – the first swing of that light, it'd record all of the colour changes on all of the vertices in that area, and then save it as data and just play it back as an animation rather than going on to calculate the lighting constantly. You'd get a little bit of slowdown when you went in, but after that it was nice and smooth." Even with the memory boost, developers did eventually

» [N64] Eric Johnstone got to spend a lot of time at SGI watching the hardware evolve while developing *Star Wars: Shadows Of The Empire*.

find the system's limits – something you can see in the leaked demo of Rare's unreleased game *Dinosaur Planet*. "I think we were running at 15fps most of the time so clearly had pushed it too far! But as with *Diddy Kong Racing* (and much of the *Dinosaur Planet* team were from that team also) we just wanted to realise our vision and screw the technical limitations," says Lee. "I had a great moment with *Dinosaur Planet* when I demoed the game on a giant projection screen at Rare with ex-Nintendo Of America president Arakawa-san and it's like this big cinematic-style game coming out of an N64… lots of applause and a happy moment for the team." The game ultimately received a new direction and was redirected towards the N64's forthcoming successor. "*Star Fox Adventures* happened which was both a blessing and a curse but out of that transition a few of us (myself, Kevin Bayliss and Phil Tossell) at least got to go work with Miyamoto-san and Iwata-san in Kyoto." Other games made similar leaps to the GameCube, including Capcom's *Resident Evil Zero* and Silicon Knights' *Eternal Darkness: Sanity's Requiem*.

Although the Nintendo 64 was a powerful console with many advanced features, it was

» [N64] Not every late game used the Expansion Pak to look great – *Sin & Punishment* was utterly superb on stock hardware.

» [N64] Though it required compromises, the N64 conversion of *Resident Evil 2* was a miraculous use of a 64MB cartridge.

unable to repeat the success of the SNES, which did eventually become the best selling console of its generation. The N64 sold fewer units than its 16-bit predecessor, and Nintendo fell behind Sony to become a distant runner-up in the global home console market. The N64 struggled terribly in Nintendo's traditional stronghold of Japan, where the console's relative lack of RPGs was a real problem, and it even wound up selling fewer units than the Sega Saturn. It also has fewer software releases than either of its competitors – just under 400, compared to over 1,000 for the Saturn and over 4,000 on the PlayStation. While it should be noted that Nintendo remained profitable throughout the N64 years, judged by these measures the console does not look like a success.

But it's impossible to deny the legacy of Nintendo's console. For a start, it was influential at a hardware-design level. As Lee pointed out, every console manufacturer eventually borrowed bits of the N64 controller, even if its distinctive shape wasn't one of them, and four controller ports became standard until wireless connectivity made them redundant. What's more, it's arguable that the N64 did more than any of its rivals to advance 3D gaming. It was a small but significant step forward graphically – when compared to the blocky textures and wobbly walls of PlayStation and Saturn games, N64 games generally look more solid and stable. But more than that, the hardware arrived at a time when developers were still working out how to design 3D games, and the reason that the N64's hit list is so familiar is because so many of its games provided a template for the rest of the industry to follow. It's certainly telling that Nintendo didn't radically alter its designs for *Mario* and *Zelda* on the GameCube.

Twenty-five years on, that's perhaps the best way to contextualise the N64's place in history. It's a piece of hardware that was designed by experts in 3D, who didn't just care about having it as a selling point, but making it look better than anyone else did. It ran games that elevated the standards that players expected of 3D games, from control schemes to inventive stage designs. Although it wasn't the most popular platform of its day, the N64 was the console that confidently signposted our way into the 3D future. ✱

NINTENDO 64

Inside The

PRESS AND IMPRESSED

JES BICKHAM OF N64 MAGAZINE RECALLS HIS TIME WITH THE CONSOLE

Describe what it was like seeing N64 games for the first time.

The first N64 game I saw (and played) in the flesh was *Super Mario 64* on a demo pod in Dixons in Bristol. (I didn't write for *N64* until issue 7.) It was mind-boggling; the chunky 3D visuals, the movement and momentum, the sense of space and play. It's hard to overstate the translation of 2D to 3D gaming as presented in that game alone; what an impact! And it felt like an ambassador for the future and all the N64 games that followed: *this* console can do *this*, and *this*, and *this*.

What do you feel was the most technically impressive game on the console and why?

Early doors, *Wave Race 64* was a contender. That water, for all its chunky, polygon-heaving look now, remains remarkable (the GameCube sequel *Blue Storm* couldn't touch it). The *feel* of it! *Perfect Dark*, at times, was transcendent, even if its reach outstripped its grasp at times. (Anyone who tried to play Counter-Ops with a single-digit framerate can testify.)

How important do you feel the inclusion of four control ports was to the success of the system?

Essential. The hundreds or thousands of hours we lost in the N64 office to multiplayer games of *Mario Kart 64*, *Smash Brothers* and *GoldenEye* were testament to that – every. Single. Lunchtime. And that was a thing that translated to bedrooms and living rooms globally. The multiplayer experience on the N64 was glorious – no need for multi-taps, just plug in your controller and go.

N64 Magazine seemed very hyped about the Expansion Pak at the time. Do you feel that excitement was justified?

I think, looking back, it was exciting as it was a fix and a riposte to some of the bad press the N64 was getting at the time. Being frothing-at-the-mouth fans of gaming's great underdog, we were understandably thrilled about it; blurry visuals were always a criticism, then *Turok 2* rolled around and looked like a million dollars. Was that excitement justified? No, probably not, it was more of a marker of where the critical consensus was at the time, but it was a signpost of our love for the N64 and its games. And, you know, the Expansion Pak gave us the full *Perfect Dark* experience.

Why do you think *N64 Magazine* remains so well-loved today?

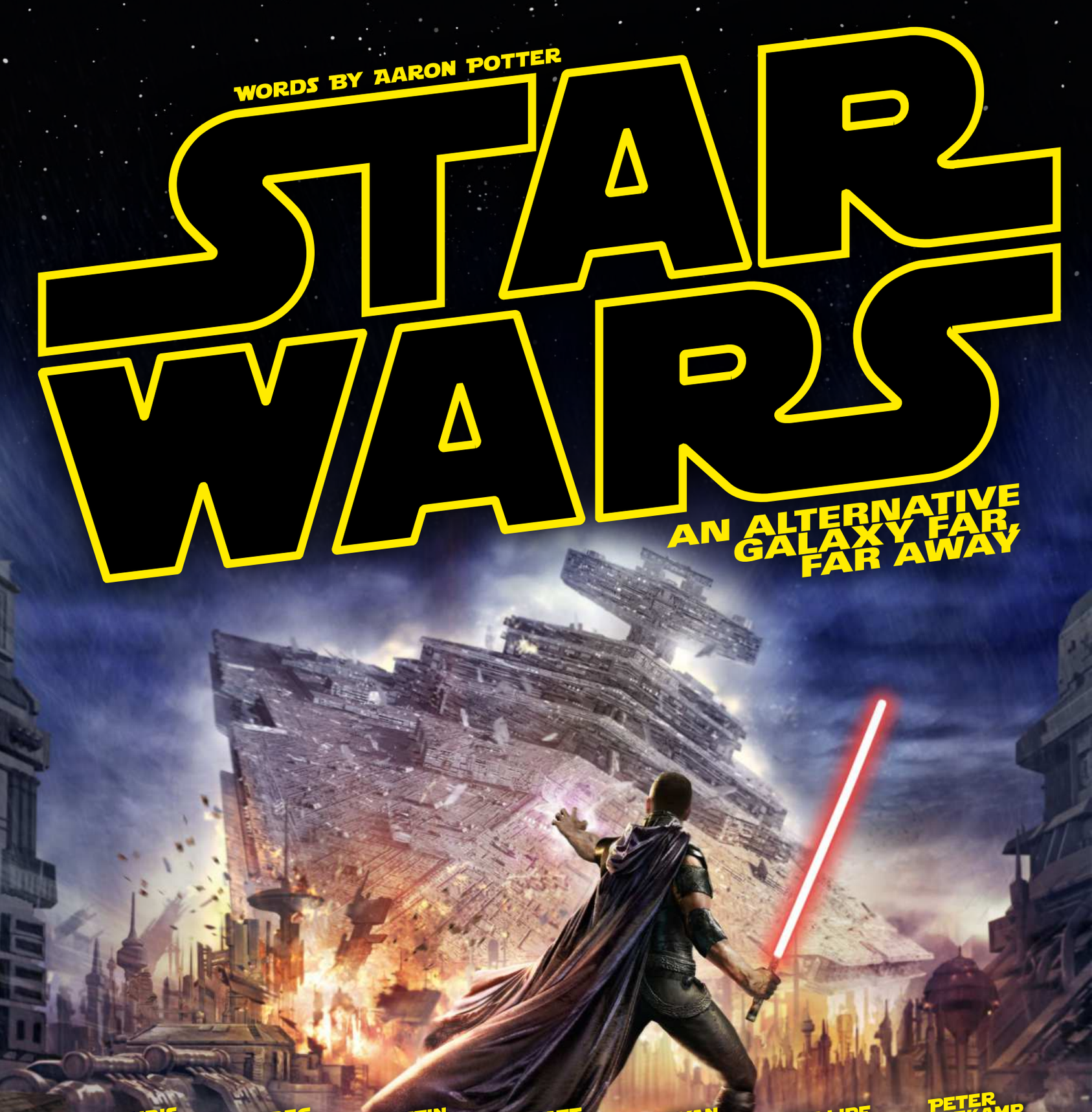
We all loved Nintendo. I mean, really, really loved Nintendo; and that passion and enthusiasm carried right on through to the readers. We were honest, too – as anyone who remembers the infamous *Superman 64* or *Mortal Kombat Mythologies* reviews will know – and I think that honesty meant people believed us when we were excited about something, as well as disappointed.

Also, everyone on the team was brilliant at their 'thing' and funny in their bones. We also had some of the best writers in the business. Every day was magic for us, and I think that came through on the printed page. Glory days!

WORDS BY AARON POTTER

STAR WARS

AN ALTERNATIVE GALAXY FAR, FAR AWAY



CHRIS FOSTER

» Chris was a designer at LucasArts for both *Jedi Outcast* and *Jedi Academy*. Recently, he's had a hand in *Call Of Duty*.

GREG ZESCHUCK

» As one of BioWare's initial founders, Greg Zeschuck worked as an executive producer on *KOTOR*.

JUSTIN LAMBROS

» Justin Lambros did a lot of scriptwriting on *Jedi Knight II: Jedi Outcast* prior to helping out on *Republic Commando*.

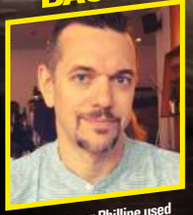
MATT OMERNICK

» Matt was lead art designer on the *Force Unleashed* games before founding cognitive health company Akili Interactive.

RYAN KAUFMAN

» Writer Ryan Kaufman was responsible for establishing Delta Squad's unique personalities for *Republic Commando*.

PHILLIPE BAUDE



» Lead designer Phillipe used his knowledge of the *Splinter Cell: Pandora Tomorrow* engine to make *Lethal Alliance* work.

PETER DELLEKAMP SIEFERT

» This lead game designer wanted to merge *"Star Wars* with *Battlefield 1942"* through his work on the *Battlefront* games.

BEYOND THE SKYWALKER SAGA AND BEFORE THE DISNEY ACQUISITION, THE STAR WARS EXPANDED UNIVERSE WAS HOME TO MULTIPLE VIDEOGAMES THAT FURTHER EXPLORED THE GALAXY. FROM THIRD-PERSON SHOOTERS TO EPIC RPGS, WE SPEAK TO THE DEVELOPERS RESPONSIBLE FOR FILLING IN THE GAPS BETWEEN CINEMATIC EPISODES

When George Lucas first sat down to pen a story about a hopeful farm boy with dreams of space travel, odds are he didn't foresee how popular further adventures set in that galaxy far, far away would become. Forget spawning eight direct sequels and a handful of spin-offs, *Star Wars* also went on to be explored in realms outside of the standard movie format – including comics, books and countless videogame tie-ins that made immersing yourself into this world of Wookiees and space wizards easier than ever. Then suddenly, on 25 April 2014, the new Disney overlords saw fit to de-canonise almost four decades' worth of Expanded Universe stories. Those tales of bravery, triumph and tyranny still exist, sure, yet now they're referred to as 'Legends' that sit firmly out of the main *Star Wars* timeline.

Disney has since decided to cherry-pick certain concepts from this period, when the EU was the only source of new material for *Star Wars* fans, and integrate them into its own plans. Thank the Force, too, because while some may consider the period between each trilogy's release – when *Star Wars* movies were absent – inconsequential to the Skywalker saga, for a whole generation of fans names like Rianna Saren, Bastila Shan and Kyle Katarn carry a lot of credence. Heroes such as these demonstrated that *Star Wars* could be so much more than simply Luke Skywalker, Han Solo and Leia Organa. A feat not possible were it not for the talented developers that were tasked with respecting Lucasfilm's established canon while finding room to innovate and introduce their own.

"A reluctant hero fighting against a new threat." That's how Raven Software's Christopher Foster describes Kyle Katarn, arguably one of the most famous protagonists in all of *Star Wars* videogames. First introduced in *Dark Forces* (1995), through him players finally got to experience events only hinted at in the original trilogy. The game's opening mission, for example, depicts his attempt to steal the Death Star plans (yes, those ones). Turns out it involved blasting away endless legions of stormtroopers held up in an Empire base situated on the planet Danuta. Admittedly, this opening mission served more as a prelude for events to come, but still, it highlighted LucasArts' willingness to fill out this rich sci-fi universe in videogame form.

Katarn himself was so popular, in fact, that his imperial-turned-rebel-mercenary journey became the nexus point in a series of *Star Wars* games that would sit under the *Jedi Knight* banner. Because while *Dark Forces* solely let players view the action from behind the sights of a blaster, all three sequels gradually expanded on this core combat. By the time Raven Software took over development duties from LucasArts for *Star Wars Jedi Knight II: Jedi Outcast* (2002), learning how to properly wield a lightsaber became equally as important as traditional first-person gunplay.

This all happened at an exciting time for *Star Wars*, when the prequel trilogy was confirmed by Lucas as a sure thing. As such, LucasArts needed a team that had hunger, drive and, most importantly, could do justice continuing Katarn's story in the period set after *Return Of The Jedi*. Having proved its ability with games like *Heretic II* and *Elite Force*, Chris Foster and his superfan colleagues at Raven Software jumped at the opportunity to create a follow-up that was exciting and engaging. One of the primary methods they went about doing this was by iterating on the lightsaber combat that was introduced in *Dark Forces II*.

> **CHRIS FOSTER**
> "OUR TEAM WANTED THE LIGHTSABER COMBAT TO NOT JUST BE A GUY WAVING A STICK AROUND THAT ONE-SHOTTED ENEMIES"

"Our team wanted the lightsaber combat to not just be a guy waving a stick around that one-shotted enemies," Chris reveals. "Previous games had shown us that it could almost be a living extension of the player – we wanted it to be the ultimate combination of a weapon and an extension of the player's will." Raven ▶

BEFORE BATTLEFIELD

EARLY GAMES THAT FLESHED OUT THE STAR WARS UNIVERSE

STAR WARS: DARK FORCES

Dark Forces was the introduction of fan-favourite hero Kyle Katarn, being an FPS in the vein of *Doom* that proved you didn't need a lightsaber to make a great *Star Wars* game. Beginning shortly before *A New Hope*, it runs parallel and offers additional context to the film's events.

STAR WARS: MASTERS OF TERÄS KÄSI

Presenting the action of *Star Wars* through a series of one-on-one fights is just as silly as it sounds. Even still, *Masters Of Teräs Käsi* builds out the universe with the introduction of original character Arden Lyn, who the Emperor recruits to try to take down the Rebel Alliance's top leaders.

STAR WARS TRILOGY ARCADE

No Nineties arcade was complete without the inclusion of *Star Wars Trilogy Arcade*, an on-rails experience that replicated key moments from the original trilogy. The joystick controller doubled up as a lightsaber or flight stick, gifting you control of familiar events from a new perspective.

STAR WARS: SHADOWS OF THE EMPIRE

Initially released for the N64, *Shadows Of The Empire* is a third-person adventure based around the *Star Wars* multimedia project of the same name. You play as Dash Rendar completing missions on foot, as well as in a variety of racing challenges where you pilot vehicles like the Swoop Bike.

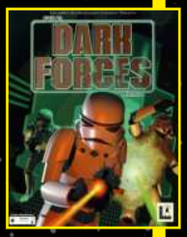
STAR WARS GALAXIES

Before *The Old Republic* continued BioWare's ancient era of Jedi, another PC MMO set in the *Star Wars* universe existed. Set in the aftermath of the first Death Star's destruction, players create their own hero and traverse planets like Dathomir, Naboo, Tatooine and the forest moon of Endor.

THE LIFE OF KYLE

A BREAKDOWN OF THE JEDI KNIGHT HERO'S MANY APPEARANCES

STAR WARS: DARK FORCES



Kyle Katarn's introduction came in the *Doom*-esque *Star Wars* shooter *Dark Forces*. Starting out his career as a member of the Imperial Army, the game opens with him having defected and working for the Rebel Alliance. He is ultimately tasked with dismantling the Empire's Dark Trooper project.

STAR WARS JEDI KNIGHT: DARK FORCES II

After learning that he is Force-sensitive and that his father was killed years prior by a rogue Dark Jedi, Kyle embarks on an adventure to seek revenge. In doing this, he discovers the Valley Of The Jedi and embraces his destiny of being a Jedi Knight.

STAR WARS JEDI KNIGHT: DARK FORCES II – MYSTERIES OF THE SITH

Mysteries Of The Sith finds Kyle when he has reached Master status, training fan-favourite book character Mara Jade in the ways of the Jedi arts. Training is cut short, however, when Kyle goes missing after researching a Sith temple, forcing the young Padawan to go after him.

STAR WARS JEDI KNIGHT II: JEDI OUTCAST

Having cut himself off from the Force after almost falling to the Dark Side, *Jedi Outcast* sees Kyle trying to stop an Imperial branch from imbuing their army with Force powers. He picks his lightsaber back up after the supposed death of a friend at the hands of a Dark Jedi.

STAR WARS JEDI KNIGHT: JEDI ACADEMY

Placing you in the shoes of a new student at Luke Skywalker's academy, you work under the tutelage of Master Katarn. Using his guidance, you must thwart the Disciples Of Ragnos' attempts to rule after choosing to align with the Light or Dark Side of the Force.

STAR WARS: LETHAL ALLIANCE

Lethal Alliance rendered the *Star Wars* EU canon much hazier by having Twi'lek Rianna Saren steal the Death Star plans in lieu of Kyle Katarn. However, Ubisoft Montreal made up for it by having the Jedi Knight legend hire her for a job early on.

▶ underwent rigorous prototyping to ensure it wouldn't feel clunky. "We tested out the first stormtrooper AI, using buttons, puzzles, Force powers and of course, the lightsaber. [We] tweaked timing, animations, reactions, damage and the blaster parrying mechanics until they felt the way we needed them to be."

For as improved lightsaber wielding in *Jedi Outcast* now was, it also wasn't lost on Raven just how important the legendary weapon should be handled story-wise. Much like how Obi-Wan gifting Luke his father's lightsaber represents a turning point in his story, Kyle Katarn needed a similar moment – especially since the sequel picks up after he's cut himself off from the Force completely. Fortunately, it arrives early on at the Valley Of The Jedi, after Katarn allegedly loses his friend and close ally Jan Ors at the hands of a Dark Jedi. "When you picked up that lightsaber after having used guns for the start of the game, we wanted you to know you had arrived," Chris concludes. "Having that thing in your hand was your destiny and it was a part of you."

***Knights Of The Old Republic* (2003) is yet another *Star Wars* game that treats this important Jedi rite of passage with the significance and excitement it deserves.** As a full-blown RPG rather than an action game, such moments are generally given more time to breathe. Taking place approximately 4,000 years prior to the birth of Luke Skywalker, this was just one of many freedoms BioWare had given itself when choosing to set a game so far before anything else *Star Wars*. Whereas Raven and other developers making tie-in games between the prequel era and Disney acquisition were often forced to work around canonical gaps situated between episodes, here there was no such problem.

It was an easy decision, as BioWare cofounder and executive producer on *KOTOR* Greg Zeschuck remembers. "We had a choice of current or prior, and we didn't really want prior at all because we knew the *Star Wars Galaxies* guys quite well and they had a tough time with scrutiny. [Theirs] was somewhere in the phase where there can't be lots of Jedi, so no players can be Jedi. We always said that's the dumbest thing on the face of the Earth." Greg and his team understood that engaging players using a proper hero's journey arc meant making them a Jedi, and did this by letting them create their own character – a hallmark of the RPG genre BioWare specialised in.

KOTOR's ultimate goal was to reflect everything through the player. An ethos that went so far as to inform how its story and dialogue was structured. You'd be able to make decisions that leant either on the Light or Dark Side of the Force, having companion characters and the world at large react to them. The beginnings of such ideas are seen in other BioWare role-playing games such as *Baldur's Gate II* and *Neverwinter Nights*, but the studio wanted to push the visual

» [PC] Kyle Katarn has relinquished his Jedi powers at the start of *Jedi Outcast*, meaning only blasters and grenades are available to deploy.

» [PC] Kyle Katarn was introduced in *Star Wars: Dark Forces* and went on to star in several games.

» [PC] Unlike every other game in the *Jedi Knight* series, the fourth and final game, *Jedi Academy*, saw you play as a customisable Padawan.

representation of these role-playing elements further than before.

"It was actually after a few months when we realised that we should change the character's appearance depending on which side of the Force they fall on," Greg reveals. "It really had to be all about the character. That was the big revelation for us. The idea that you could reflect in your on-screen character with subtle changes. I was the one who proposed the bags under the eyes if they turn evil and they start looking haggard. Everyone laughed, 'That's ridiculous.' Well, two weeks later they were like, 'Yeah, that's what we're doing.'" Visual changes made for a rather unique depiction of the Force, yet little did BioWare know that it was also laying the groundwork for its own sci-fi RPG universe in *Mass Effect* a few years later.

Part of what makes *KOTOR* so memorable in many players' minds is its grand scope. Whereas most other *Star Wars* games released up until this point focussed on linear campaigns that spanned various genres, here was a take on Lucasfilm's IP that could be approached in multiple different ways. Not only in terms of the alignment system which saw you err on the side of Jedi or Sith, but also in the cinematic, round-based battles. This introduced an element of chance to combat and forced you to think more strategically.

As a holdover from BioWare's fondness of tabletop RPGs and work on previous games, the studio experimented with real-time action before settling on something more filmic. "Up to that point all *Star Wars* games had been action games, there'd been no strategy or turn-based," says Greg. "We really felt that the game would be better with a party, and those things are in direct conflict. That's why we created something that was halfway between… where you could play it as an action game if you ▶

GREG ZESCHUK
"IT WAS ACTUALLY AFTER A FEW MONTHS WHEN WE REALISED THAT WE SHOULD CHANGE THE CHARACTER'S APPEARANCE DEPENDING ON WHICH SIDE OF THE FORCE THEY FALL ON"

» [PC] It's always worth bringing your Force powers to a Rancor fight.

» [PC] The inclusion of original trilogy characters like Lando Calrissian helped lend the *Jedi Knight* games a sense of *Star Wars* authenticity.

» [Switch] The first two *Dark Forces* games aren't on consoles, but you can find *Jedi Outcast* and *Jedi Academy* (shown here) on contemporary consoles.

PHILLIPE
"WHEN YOU LOOK AT THE WHOLE SAGA, THE REAL HERO MIGHT BE R2-D2"
BAUDE

Hey, there. What can I do for you?
I want to talk to you about your brother.
Do you know anything about the planet we're on?
Nothing. Never mind.

» [Xbox] Engaging with companions in *KOTOR* is key to unlocking their full potential and building up your relationships with them.

WHEREABOUTS KNOWN
CHARACTERS THAT MADE THE JUMP FROM GAME TO SCREEN

DELTA SQUAD

Prior to Disney's acquisition of *Star Wars*, *Republic Commando*'s Delta Squad popped up in *Clone Wars*' third season in the episode *Witches Of The Mist* as an extended cameo. They arrive at the Jedi temple following a massacre on planet Devaron, returning the bodies of a fallen Master and his Padawan.

DARTH REVAN

Knights Of The Old Republic's Darth Revan appears in a deleted scene intended for use in an episode of the *Clone Wars* TV show dubbed *Ghosts Of Mortis*. His appearance was cut late into production by George Lucas over concerns of what their inclusion would mean for the depiction of the Force.

DARK TROOPERS

The most dangerous enemy to appear in *Star Wars: Dark Forces* were the Dark Troopers, a breed of advanced battle units easily identifiable by their black, hefty aesthetic. They made their on-screen debut some 15 years later in season two of *The Mandalorian*, this time as Moff Gideon's personal guard.

» [Xbox] Unlike most *Star Wars* games at the time, *KOTOR* stuck to its *D&D* roots and had the action play out in a unique, round-based fashion.

wanted but for the really difficult battles you pause it, set up some moves, let it run a bit and then pause again.

"If you went solo, that'd be different right? If it was just you running around it'd feel empty from a story perspective. You wouldn't have all these characters reflecting the world back at you, so from our perspective it was important to find a solution. We also didn't want to lose the cinematic flair of *Star Wars*. You know it's actually quite fantastic to watch, with all the lightsabers flying and all the clashing. We still wanted that, too, so that's how we landed on the 'pause and play' approach."

For a single-player experience as it is, you never feel alone in *Knights Of The Old Republic* thanks to the eclectic range of AI-controlled party members crafted by BioWare's writing team. From roguish war hero Carth Onsai and honourable Jedi Bastila Shan, to the *Star Wars* saga's first openly gay character in Juhani, these characters' different personalities added to the game's sense of grandeur and sophistication. Your ultimate mission might be to track down and defeat Darth Malak's evil threat, but it wouldn't be as memorable without friends by your side.

The success of *KOTOR* inevitably led to a sequel, although it was Obsidian Entertainment and not BioWare that handled development. Set five years after the events of the first game, *KOTOR II: The Sith Lords* focused on 'The Exile', who had served under Darth Revan and committed such heinous crimes that they severed their ties to the Force in order to survive. While it lacks the polish of its predecessor, it was praised on release for its complex story and rich characters which expanded the arcs of existing *KOTOR* characters, while introducing plenty of new ones, including the titular Sith Lords.

As shown, this era of *Star Wars* games was an excellent opportunity for creators to explore this universe from the perspective of all-new characters. They didn't even need to be human – a point proven by *Star Wars: Lethal Alliance* when it released exclusively for handheld consoles in 2006. Set snugly between the events of *Revenge Of The Sith* and *A New Hope*, it tells the story of Twi'lek mercenary Rianna Saren, who teams up with security droid Zeeo to thwart the Imperial Army's growing forces and aid Princess Leia's Rebel Alliance.

Developer Ubisoft Montreal knew it'd be a challenge to create a third-person action game without lightsabers, though, and still have it be exciting. True, this was a bite-sized adventure intended for the Nintendo DS and PSP, but the intention was always for *Lethal Alliance* to be just as ambitious as other contemporary *Star Wars* games despite a shrunken scope. The team pulled this off by fully capitalising on Rianna and Zeeo's unique two-person partnership, almost developing a *Ratchet & Clank*-esque camaraderie between the pair and integrating this into gameplay.

"The focus was to play an acrobatic spy – Rianna – meaning acrobatics and blasters gunplay and find interesting combo mechanics with Zeeo the droid," reveals lead game designer Philippe Baude. This unique setup wasn't without its development hurdles. "It was actually super hard to find how the two of them could interact," he continues. "Of course, Zeeo as a droid could do the hacking… but could he do more? How could he be useful in a blaster fight? How can he support the acrobatic skills of Rianna? We really worked hard for a few months to establish his skills and how to create those cool combos."

» [Xbox] Exploring different planets like Dantooine requires you to be cautious, otherwise even the local wildlife poses a threat.

This inspired occasions where Rianna must defend Zeeo from fire as he sliced through to the next area, and giving her the ability to launch him at any unsuspecting enemies for a successful (and satisfying) stun. At its most creative, *Star Wars: Lethal Alliance* has Rianna send Zeeo up high for use as an anchor point when swinging or sliding across large ravines. Small touches like these helped Ubisoft Montreal's take stand apart from other *Star Wars* shooters, while leaning into the IP's most underutilised aspects. "Having a droid as one of the main characters was so cool and so *Star Wars*: it was a no-brainer," Philippe

says, "and actually, when you look at the whole saga, the real hero might be R2-D2. He's saving everybody from *Episode I* to *Episode VI*. Without him, there is no *VII*, *VIII* and *IX*."

Is Philippe surprised there hasn't been a Twi'lek, or any other non-human character, leading a *Star Wars* game in the years since *Lethal Alliance*'s release? "Yes and no," he considers. "It's always easier for people to have a direct connection with something close to them. So 'humans' in [the] *Star Wars* universe is the easier road. But recently with official TV spin-offs like *Rebels* or even *The Clone Wars*, they introduce strong alien female characters. Ahsoka Tano will have her own show and I am sure that we will soon see Hera Syndulla in a live-action TV show." Could a game follow soon after?

Speaking of alternate perspectives in *Star Wars*, one never explored too much (at least in the prequel trilogy itself) is that of the Republic's Clone Army. TV shows like *The Clone Wars*, as Philippe mentioned, have done a great job at addressing this since even before Disney's acquisition in 2012, but videogames were once again well ahead of this curve. Because while the clashes between droids and clones were largely kept as background on the silver screen, games like *Star Wars: Battlefront* and *Republic Commando* enabled you to live out these epic confrontations right on the frontlines.

"The fact that the major battles from *Star Wars* had never been explored from the grunt level was a compelling pitch", reveals Peter Dellekamp Siefert, designer on both of Pandemic's original *Star Wars: Battlefront* games. "The internal message, 'Relive all the classic battles of *Star Wars*, any way you want,' was developed by [game director] Eric Gewirtz and [studio COO] Greg Borrud. The realisation that you could play with 'all the action figures and vehicles' was a huge call back to all of our youths."

» [Xbox] The Clone Army's Jet Trooper class offered the advantage of height and mobility in the maps they were available, like Kamino.

» [Xbox] Space battles wouldn't appear until the sequel, but iconic ground vehicles were still pilotable in *Battlefront*'s initial outing.

» [Xbox] "Roger, Roger!" Even the separatist's disposable droid army offered different tactical classes in the first *Star Wars: Battlefront*.

PETER DELLEKAMP SIEFERT
"THE REALISATION THAT YOU COULD PLAY WITH 'ALL THE ACTION FIGURES AND VEHICLES' WAS A HUGE CALL BACK TO ALL OF OUR YOUTHS"

Star Wars already had a great track record for letting players take flight via Factor 5's various *Rogue Squadron* games, but never before had large-scale ground battles received similar treatment. *Battlefront* (2004) was the game to finally change this, however, focusing on objective-based first and third-person shooting that saw up to 32 players duke it out across battles from both the original and prequel trilogies. Multiplayer being the core gave Pandemic a rare chance to expand on all four factions' class structures. Soldier, Engineer and Pilot archetypes were already well-established within *Star Wars*, but others had to be thought through more carefully.

"When we got to the Special and Officer classes there were gaps in the prequels since they didn't have as much information. They hadn't benefitted from 20 years of canon the originals had," Peter reveals. This inspired Pandemic to develop distinct playstyles, to encourage players to experiment with other trooper types. "At first, the Clone Commander with a chaingun was controversial, because it was using bullets and at that time most people thought projectile weapons didn't exist in *Star Wars*. There was plenty of back and forth because we were exploring so many aspects of the *Star Wars* universe where deeper questions hadn't really been considered."

The first *Battlefront* was such a hit, LucasArts greenlit a sequel that released a year later. Grunt-level battles would make a return, of course, yet scope increased thanks to the addition of space battles, playable heroes and a more narrative-driven single-player portion that took place between Geonosis (*Attack Of The Clones*) and Hoth's (*The Empire Strikes Back*) epic battles. "The campaign became focused on the narrative of the 501st Legion. This gave us a thread that connected the clone troopers of the prequels with the stormtroopers of the OG series," Peter explains.

Battlefront II's campaign did a decent enough job of highlighting the Republic army's progression in the series, but those wanting to dive more into the mindset of a clone had the chance to do so in *Star Wars: Republic Commando*, released earlier that same year (2005). Developed in-house by LucasArts, the game cast players as the leader of an elite clone trooper unit called Delta Squad, following their exploits in the Clone Wars, all as they learned to bond and work together as a team. New Zealand actor Temuera Morrison returned to lend some authenticity to the game's clone troopers through voice, but how do you go about giving what should be identical clones a distinct personality?

"At first, there was some internal resistance to the ideas that the clones would be differentiated at all," explains *Republic Commando* cowriter Ryan Kaufman. "But

» [PSP] From Coruscant to Mustafar, the campaign in *Star Wars Battlefront II* followed the story of Anakin's 501st Legion.

THE HEROES OF DELTA SQUAD

MEET THE MEN BEHIND THE CLONE TROOPER HELMET

BOSS (RC-1138)

From his birth on Kamino up until the group's rescue of Wookiee Chieftan Tarfful on Kashyyyk, Boss is the player's conduit for Delta Squad's escapades. He has a firm but fair attitude that keeps the others in check, and is the only member with the military rank of Clone Sergeant.

SEV (RC-1207)

As the squad's dedicated sniper, Sev enjoys racking up kills and is your trooper of choice when wanting to take out targets from afar. He unfortunately loses his life for the good of the mission when the rest of the group are forced to abandon him during the evacuation of Kashyyyk.

SCORCH (RC-1262)

As well as being the voice of reason, Scorch is also the wise-cracker of the team that helps ground Delta's insane actions. His speciality is in handling high-explosives, which makes using him ideal for blowing up a blocking wall, destroying artillery or taking down mass groups of enemies efficiently.

FIXER (RC-1140)

Fixer is Delta Squad's second-in-command and serves as the team's tech expert. As arguably the most intelligent of the group, he's the one to call upon whenever you want to slice through walls or hack into enemy tech. Fixer, as his name suggests, solves a lot of problems.

» [PSP] *Star Wars Battlefront II* increased the scope by introducing larger maps, more modes and playable heroes like Obi-Wan.

» [PSP] *Battlefront II*'s PSP version held its own against its PS2 counterpart, even faithfully depicting epic clashes between heroes and villains.

» [PSP] Flying through a busy cityscape was just one of multiple scenarios Ubisoft Montreal thought up to have Rianna and Zeeo collaborate.

▶ then, we began to research real soldiers, and we found some inspiration in the way that US soldiers would customise their kit, and their vehicles. They wanted to express their individuality, as a reaction against the mass brutality of war. You can imagine the clones feeling the same way, especially facing off against a mass-produced droid army. That example began to resonate, and people embraced differentiation between clones."

It was important to make Scorch, Fixer, Sev and player character Boss all feel unique, not least as hearing the same voice shout "get moving" or "need Bacta" over and over could get a little stale. The same passion for variety is found in *Republic Commando*'s FPS gameplay. Because while gunning down enemies is key, LucasArts also ensured to give players a suite of different tactical options as the unit's leader. So much so that telling Delta Squad to set up vantage points and sniper positions eventually becomes second nature.

Players get to blast their way through three key battles set between the events of *Episode II* and the then-unreleased *Episode III* as part of *Republic Commando*'s campaign. And though you'd think such a tight time period would be too restricting for LucasArts to creatively work in, Justin Lambros – another one of the game's writers – says it was far from the case. The key was to pay respect to the legacy of other successful *Star Wars*-set military shooters.

"Geonosis was an obvious early inspiration from *Attack Of The Clones* and it also lent itself to that dark and eerie *Aliens* vibe which was shown off so well in the early teaser trailer for the game," says Justin. "The RAS Prosecutor was a great way to pay homage to the original *Dark Forces* game, which was such a groundbreaking experience for *Star Wars* games (and shooters at the time) and next to Hoth, onboard a starship is the next most common location for a *Star Wars* game to take place. Then Kashyyyk was a major location from the *Revenge Of The Sith* movie that fans had been clamouring to see, so that made tons of sense as a location."

» [Switch] *Republic Commando* opens with a bang, at the very beginning of the Klingon War with Delta Squad gunning it through Geonosis.

Following the prequel trilogy's completion, it'd be fair to say that thoughts towards *Star Wars* had somewhat soured. Anakin Skywalker's transformation into Darth Vader had disappointed a large portion of the fanbase, and with no more *Star Wars* movies seemingly in sight, the job to continue fleshing out this universe again fell to videogames. This inspired LucasArts to reignite excitement by developing a different type of Jedi game, one that would let players unleash the power of the Force like never before.

The release of *Star Wars: The Force Unleashed* in 2008 saw players take on the role of Starkiller in the aftermath of *Episode III*, operating as Vader's secret apprentice who hunts down survivors of the Jedi purge. Him being such a powerful Force user led LucasArts to get Industrial Light & Magic involved and develop a new engine using early PS3/Xbox 360 dev kits. It was the only way to do

THE SAGA CONTINUES

EXPLORING THE STATUS OF STAR WARS GAMES UNDER DISNEY

STAR WARS: BATTLEFRONT II (2017)

The first entry into DICE's rebooted *Battlefront* series may have disappointed due to microtransactions and poor lootbox integration, but this FPS follow-up has made up for it. Having been rigorously supported with new heroes and content since its 2017 launch, fighting across all *Star Wars* eras looks great and plays brilliantly.

STAR WARS JEDI: FALLEN ORDER (2019)

Part-Metroidvania and part-*Souls*-like adventure, *Star Wars Jedi: Fallen Order* firmly placed itself within the events between *Episode III* and *Episode IV* to deliver players a fulfilling third-person action game. Cal Kestis' powers may be tame compared to those seen in *The Force Unleashed*, but learning new skills is empowering.

VADER IMMORTAL (2019)

This VR-exclusive adventure places a lightsaber directly in your hand and sees you rub shoulders with Vader himself in a brief, three-part story arc. Using hand motions to unleash Force abilities and blade swings adds a new dimension to the art of being a Jedi, as do the bombastic setpieces.

the abilities of a Jedi justice. As art director Matt Omernick puts it, "We were doing a lot of things new. We were reimagining the Force."

In order to achieve this lofty ambition, LucasArts put together a previs demo that showcased Starkiller's physics-defying Force powers. "One was a Force repulse," Matt explains, "which was kind of him coming in and then blasting. Then there was using the Force to throw stormtroopers around and bang them against the wall. Then we had a giant Force push that moved vehicles and scattered everything in front of it." These explosive gameplay elements combined with snappy lightsaber combat that let players slice enemies limb from limb.

These exaggerated abilities may have been the main focus to create what director Haden Blackman described as the "superheroes of the *Star Wars* Universe", but *The Force Unleashed* was also developed with the mindset of bridging the gap between the prequel and original trilogies. This meant creating an internal conflict within Starkiller, giving him fully developed companions in Juno and Proxy, and faithfully portraying this transitional period through the visuals and art design.

> **MATT OMERNICK**
> "WE WERE DOING A LOT OF THINGS NEW. WE WERE REIMAGINING THE FORCE"

"To craft the sweet spot we started with the stormtrooper helmet," Matt reveals. "What would it look like in this era? The Rogue Shadow [Starkiller's ship] was another one of those where we were starting to not only blend the kind of tech and what ships might look like, but using the art to subconsciously start to tell the story of Starkiller's shifting his psyche, right? That ship is a nice blend between a TIE fighter and an X-wing in lots of ways. It's one of my favourite designs for all those reasons, and because it became a Lego set."

The Force Unleashed II followed in 2010 and while it further fleshed out the story of Starkiller and built upon the spectacular Force-based powers that proved so popular in the original game, it wasn't as critically acclaimed and would prove to be the last big *Star Wars* game before the Disney buyout in 2012, which saw the House Of Mouse buy LucasFilm for a staggering $4.05 billion.

» [Xbox 360] *The Force Unleashed*'s intention was to make players feel like the superheroes of the *Star Wars* universe, complete with Dark Side Force powers.

Canon or not, so much effort went into games developed for the original *Star Wars* EU, it's no shock to see Disney pay at least some attention to the past. If anything, granting every game released before 2014 the status of 'Legend' makes their light burn even more brightly within the hearts of players, letting them act as beacons that could potentially inspire future generations of *Star Wars* games. While Chris Foster would love to see Kyle Katarn "become a mystery – someone whispered about, perhaps, but not seen", other developers like the door being open for Legends material to be integrated in the future. After all, as Ryan Kaufman sums up, "These stories and characters resonate with so many people on so many levels." ★

» [Xbox 360] In *The Force Unleashed*, you play as Darth Vader's secret apprentice Starkiller – modelled after and voiced by Sam Witwer, who is something of a *Star Wars* regular.

STAR WARS: SQUADRONS (2020)

This entertaining effort is a thrilling first-person space combat game that lets you get up close and personal with X-wings, TIE fighters and other ship classes like never before. Players with VR access get an extra taste of authenticity, moving their head to look around the cockpit at will to take accurate shots.

PROJECT RAGTAG (CANCELLED)

This action game would have been *Uncharted* meets *Star Wars*, focusing on a group of mercenaries attempting to pull off an elaborate heist. Unfortunately, poor player feedback internally and EA's direction to focus elsewhere saw *Project Ragtag* cancelled, and the studio creating it, Visceral Games, closed down.

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CRITICAL MASS

THE STORY OF THE PS2

THE PLAYSTATION 2 BECAME THE VIDEOGAME INDUSTRY'S BEST-SELLING CONSOLE WITH SALES EXCEEDING 150 MILLION UNITS. BUT HOW DID IT REACH SUCH LOFTY HEIGHTS? RETRO GAMER TALKS TO PAST STAFF AND DEVELOPERS TO FIND OUT

WORDS BY DAVID CROOKES

DAVID REEVES

■ Former president and CEO of Sony Computer Entertainment Europe. David is now cofounder of E Fundamentals.

DAVID AMOR

■ Cofounder of Relentless Software, creator of the multi-million selling *Buzz!* franchise. Now a games industry consultant.

DAVID DARLING

■ Cofounder of Codemasters, which published many PS2 driving games. Now CEO of Kwalee.

It was Mark Twain who said, "Facts are stubborn things, but statistics are pliable," and yet in the case of the PlayStation 2, both stacked up rather nicely. You can give or take the odd hundreds or thousands, maybe millions, when discussing the sales stats of Sony's second console – 980,000 sold on its first day in Japan on 4 March 2000; 158 million worldwide over the course of its 13-year lifespan – but the fact remains: this was the biggest-selling console of all time and, handhelds aside, nothing else has ever come close.

PS2 was, without doubt, a huge success, coming hot on the heels of a revolutionary debut console. That first PlayStation smashed the stranglehold Nintendo and Sega had on the videogame market, introducing gamers to blockbuster, arcade quality 3D titles. And when Sony saw it had sold 3.4 million by 1996 and was well on its way to achieving 10 million by Christmas, there was only one option: to create a sequel bettering it in every way.

Ken Kutaragi played a key role in developing the debut console, earning the title 'Father of the PlayStation'. His expertise (which also saw him create a new sound chip for the SNES) ensured he was tasked with spearheading the follow-up. "Kutaragi started on the development of PlayStation 2 in 1996 and it was clear from the outset it was being designed with entertainment in mind," says David Reeves, former CEO and president of Sony PlayStation EMEA.

To aid development, Sony approached third-party companies, including LSI Logic Corp, to see what they could come up with. LSI Logic manufactured the microprocessor used for the PlayStation and had a stake in Argonaut which worked with Nintendo on the SuperFX chip used in *Star Fox*. It was asked to work on a rendering chip for the PS2 and so the task fell to Argonaut founder Jez San.

"Sony gave the company the specifications it wanted which was for the chip to achieve two million polygons per second with texture mapping," Jez tells us. "We designed the most efficient way to deliver Sony's desired performance but then LSI Logic told us we hadn't won the deal because it turned out that Sony had its own in-house chip design team that wasn't working to the same spec."

It turned out Sony's internal team was working to a higher spec to deliver a faster chip that could process more polygons per second. "Had we been told to design a chip to achieve five or ten million polygons per second, that's what we would have done," says Jez. But the decision to create the PS2's CPU and Graphics Synthesiser was pivotal. "Sony's own fabrication of the chips kept development internal and it also helped reduce the cost," says David.

Sony's Graphics Synthesiser was a parallel rendering engine capable of handling very high pixel fill rates and the RAM was situated on the chip, allowing for eye-watering performance. The 128-bit CPU clocked at 294.912 MHz, meanwhile, was called the Emotion Engine – deliberately emphasising its potential to take gaming to the much-vaunted 'Third Place' rather than extol its technological virtues.

"The generational advance in capabilities from PlayStation 1 to PlayStation 2 was the greatest I've experienced, before or after," says Mark Cerny, who had been contacted by the executive producer of product development, Shuhei Yoshida, about helping to develop the PlayStation 2's graphics engine.

"The original PlayStation had a custom graphics architecture and had been very successful: it was not especially tricky to program and it could produce competitive 3D graphics," he adds. "Ken Kutaragi doubled down with the PS2. Its vector units were much trickier to use but had correspondingly higher performance." ▶

DAVID LAU-KEE

■ Founder and ex-CEO of Criterion Software, developer of the RenderWare engine. Now board member of various companies.

DAVID PERRY

■ Legendary videogame developer and ex-boss of Shiny Entertainment. Now CEO and cofounder of GoVyrl.

ANDREW OLIVER

■ Cofounder of Blitz Games Studios, creator of many licensed PS2 games. Now director of Game Dragons.

> "THE GENERATIONAL ADVANCE IN CAPABILITIES FROM PLAYSTATION 1 TO PLAYSTATION 2 WAS THE GREATEST I'VE EXPERIENCED, BEFORE OR AFTER"
> MARK CERNY

MARK CERNY

■ Consulted for Sony on its PS2 graphics engine and helped Naughty Dog and Insomniac with their first PS2 games. Mark is now the president at Cerny Games.

RAY MAGUIRE

■ Former senior vice president for UK, Ireland, Scandinavia and Benelux for Sony Computer Entertainment Europe. Now cofounder of Mindfitness Digital.

KEITA TAKAHASHI

■ Game designer and artist who created the cult hit *Katamari Damacy*.

JEZ SAN

■ Founder of Argonaut Software, asked to create a graphics chip for PS2. Now founder of FunFair Technologies.

KEITH JUDGE

■ Programmer who worked on PS2 games such as *Burnout: Revenge*. Currently director of LucknowGames.

PAUL HUGHES

■ Cofounder and chief technology officer at Warthog Games, a large independent game development studio. Now head of technology at Evidential.

JASON KINGSLEY

■ Cofounder and CEO of Rebellion Software, dev-for-hire during the PS2 era.

» Sony didn't shy away from some very risqué and some distinctly weird adverts for the PlayStation 2.

Mark worked on the PS2's graphics engine for three months in Tokyo. "I'd finagled a three-month sabbatical working in the same room as the programmers creating the demos that would ultimately be used at the PS2 announcement." By this point, he'd headed up Universal Interactive Studios and signed a three-person developer called Naughty Dog and a two-person start-up called Insomniac Games.

These deals led to the production of *Spyro The Dragon* and *Crash Bandicoot*. "With *Crash Bandicoot*, every polygon mattered and nothing could be wasted but the GPU in the PS2 was dozens of times faster than what we had in the PlayStation," Mark adds. "We had roughly as many polygons as pixels and the GPU inspired us to create expansive worlds: *Jak And Daxter* and *Ratchet & Clank* simply wouldn't have been possible on PlayStation."

While the innards were developed, work progressed on the design. Kutaragi wanted a unique look highlighting the power of the new machine so out went the cream/white look of the original and in came a mature consumer electronics design.

Black was chosen to symbolise space while gradations of blue symbolised the idea of life and birth. "I imagined life being born from the oceans," designer Teiyu Goto revealed in Future Publishing's first issue of the *Official PlayStation 2 Magazine*.

> "WE HAD ROUGHLY AS MANY POLYGONS AS PIXELS AND THE GPU INSPIRED US TO CREATE EXPANSIVE WORLDS: JAK AND DAXTER AND RATCHET & CLANK SIMPLY WOULDN'T HAVE BEEN POSSIBLE ON PLAYSTATION"
> MARK CERNY

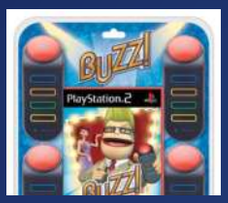
Gamers could position the console horizontally or vertically and the front-loading disc tray ensured DVDs could be inserted regardless of whether it lay flat or on its side. When it was unveiled at the Tokyo Game Show in September 1999 – having been announced six months earlier – it split opinion. But PlayStation backward compatibility, the ability to play movie DVDs and a new DualShock 2 controller offering analog support for all of its in-play buttons quickly won over potential buyers.

"The DVD player was absolutely key to the success of the PS2 just as Blu-ray was for the PS3," says David. This certainly helped distinguish the console from the 128-bit Dreamcast released in 1998, a console already floundering despite being taken to many a gamer's heart.

By competitively pricing the console – it initially retailed for £300 in the UK – the machine was cheaper or on a par with most dedicated DVD players at the time. "DVD was also absolutely

GAMING FOR THE MASSES

THE PERIPHERALS THAT HELPED POWER PS2'S SUCCESS



BUZZ!

Following on from its debut in 2005, the *Buzz!* franchise went on to include 18 games in total, 13 of which were released on the PS2. They made use of a set of specially-designed USB controllers reminiscent of those seen in TV quiz shows, each sporting a red buzzer and four coloured option buttons, allowing for simple multiplayer fun.

GUITAR HERO

This game made air guitars redundant by allowing anyone with zero experience of playing an instrument to become a rock legend. A guitar-shaped controller included buttons that matched the notes shown on screen while the fully licensed classics made even non-gamers fancy having a go. Different guitars for subsequent games kept the interest rolling.

EYETOY

Sony released its fun webcam in July 2003 and by Christmas, two million European gamers had taken a look. Launched with *EyeToy: Play*, the peripheral allowed gamers to play 12 minigames by detecting the player's movement, thereby removing the need for a controller. Dozens of games – including *Lemmings* in 2006 – went on to support it.

SINGSTAR

Bundled with a pair of USB microphones, *Singstar* was karaoke with the added ability to score points. As such, players would have to sing along to the on-screen lyrics at the required pitch and hope to keep their voice in tune. They'd then be able to play their singing back – a nice touch that helped turn this game into a long-running family-fun franchise.

DANCE MATS

Dance Dance Revolution actually made its home debut on the PlayStation in 1998 but it also had a major impact on the PS2. *Dance Dance Revolution DDRMAX 6thMix* was its first PS2 entry, once again allowing the use of plastic floor pads to record the moves each player made. Other games using these mats included *In The Groove* and *Pump It Up*.

DVD REMOTE

The PlayStation 2 wasn't only a games console – it was a decent DVD player too and it helped pave the way for the mass-market adoption of this disc format, consigning VHS to history. The optional remote controller took its time to arrive but it made playback easier than using a controller and it gave gamers yet another excuse to have the PS2 in the living room.

necessary for many games such as *Jak And Daxter* – even with careful world layout, the loads were still pretty massive and I don't think that kind of seamlessly connected open world experience could have been created on CD-ROM," says Mark.

But while the PS2 attracted buyers who simply wanted to ditch VHS tapes and saw games as a bonus, there was no doubting Sony's number one priority. "Simply having the best games as exclusives was a vital factor for PlayStation," says David. "Publishers agreeing to PS2 game development was also important. Sony had learned that having great titles at launch and in the following year was a key factor so it had lined up titles with publishers and developers in advance and it supported their marketing."

As such, courting third-party developers and publishers was as crucial for the PS2's success as the hardware itself. "Third party relations has always been a major part of the business," says Ray Maguire, who was senior vice president of Sony Computer Entertainment Europe in the UK, Ireland, Scandinavia and Benelux until 2011.

"Clearly the console is an enabler for the content and, simply put, content is king. The close relationship with developers helps shape the way they use the power of the console to get the very best out of it."

PS2 launched with a diverse line-up that included *Ridge Racer V, Armoured Core 2, Dead Or Alive 2: Hardcore, Dynasty Warriors 2, FantaVision, Midnight Club, TimeSplitters, Silent Scope, Tekken Tag Tournament, SSX* and *X-Squad*.

"There was perspective correct texturing and texture filtering, upping the quality significantly," recalls Paul Hughes, then chief technology officer at Warthog Games. "More than that, the highly-tuned demos such as Dylan Cuthbert's *Rubber Ducks* were throwing around a serious number of triangles and gave a hint of what was possible on the platform."

The aforementioned *Jak And Daxter: The Precursor Legacy*, released in December 2001, was an early glimpse of what was possible. "It was a game so technically accomplished that Sony used to tour developers showing performance analysis graphs of how beautifully parallelised its vector unit and DMA usage was," says Paul. As such, the PlayStation 2 proved the perfect platform for debuting many amazing ambitious franchises – *Kingdom Hearts*, *God Of War* and *Devil May Cry* among them – while building upon those that had already made their mark, from a trio of Tomb Raider games (including a welcome reboot in 2006 called *Tomb Raider: Legend*) to definite highlights such as *Gran Turismo 4*, *Silent Hill 2* and *Final Fantasy X*.

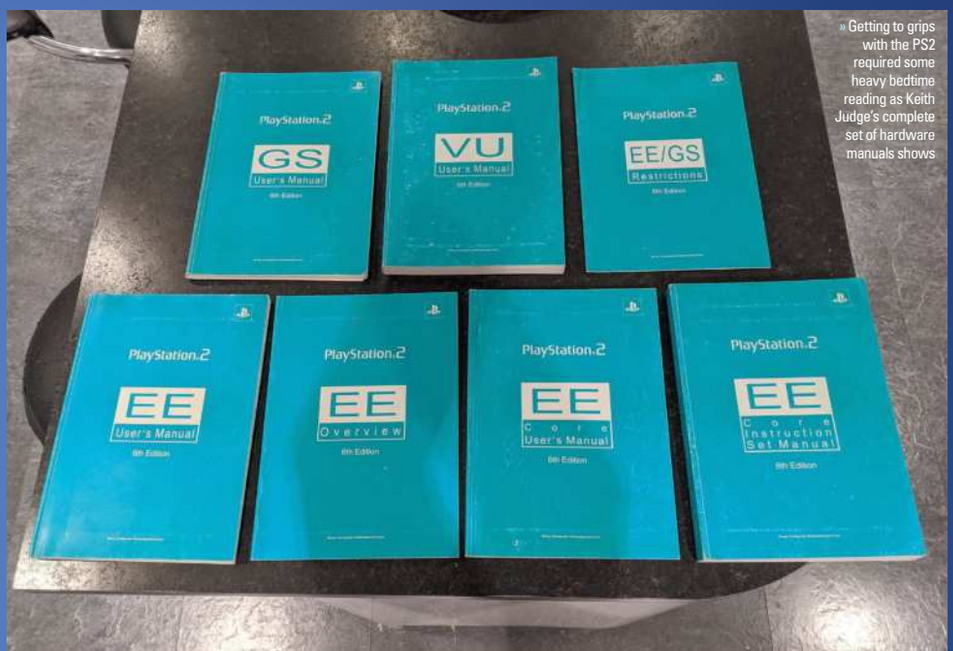
Sony was also keen to build on the relationship it had formed with standout talent such as Hideo Kojima, the director of *Metal Gear Solid*. *Metal Gear Solid 2: Son's Of Liberty* was a direct sequel and PS2 exclusive, with a huge amount of care going into its detailed environment.

"When *Metal Gear Solid 2: Son's Of Liberty* was introduced, jaws dropped in our office," says David Perry, then boss of Shiny Entertainment which was acquired by Infogrames during the development of *Enter The Matrix* (an ambitious game which included a hour of original footage and even had its own premiere party, showing how blockbuster videogames had become, see **Retro Gamer** 215 for more). "I really believed it forced us to take the PlayStation 2 even more seriously and our team then went on to make some assembly language tech demos that impressed even Mark Cerny."

For David, PS2 solved myriad problems. "Sony knew what it needed to do to tighten up the clunky issues the first PlayStation had and it also improved the controller," he continues. "Sony's people play games so those making the decisions knew what needed to be done."

Having different teams around the world worked in Sony's favour too. Phil Harrison, vice president, third party relations and research & development at Sony Computer Entertainment America, for instance, said Ray had created an independent spirit within Sony in the UK and he praised the support for British creativity. "Every territory in the PlayStation family has specific nuances which set it apart and each territory has a slightly different route to market," Ray tells us.

"It's vital that they had the support to maximise the potential and it also meant that games as part of the UK creative industries had started to get noticed as revenues rose to the value of other



» Getting to grips with the PS2 required some heavy bedtime reading as Keith Judge's complete set of hardware manuals shows

GOING LIVE

HOW SONY'S CONSOLE STUMBLED ONLINE

» The network adapter inserted into a vertical-standing PlayStation 2.

Online gaming on the PlayStation 2 got off to a stuttering start. While it would be great to report that it then hit its stride, in truth it generally floundered, much to the frustration of players. It wasn't for a lack of desire – Sony Computer Entertainment America (SCEA) president Kaz Hirai discussed online plans for the consoles at no less than three E3s and there was talk of selling 400,000 network adapters in the US by the end of 2002. But it was by no means as fluid a rollout as Xbox Live when it made its debut that year, nor was it as joined up as the service offered on Sega Dreamcast in 1998.

In some cases, it was about supply not meeting demand: *Final Fantasy XI* was hugely anticipated in 2003 but the required hard drive which needed the Network Adapter to connect online was slow to arrive, denting early sales. And while US gamers enjoyed a slew of titles compatible with the Dualband Modem, from *Madden NFL 2003* and *Twisted Metal: Black Online* to *Tony Hawk's Pro Skater* 4 and *EverQuest Online Adventures*, short initial supplies made SCEA bosses jumpy. Add the fact that Sony didn't even have a unified service nor an official name for its online capabilities and hiccups felt inevitable.

One of the issues was that the responsibility for online multiplayer games was left to the game publishers that ran them on third-party servers, needing gamers to have different identities to log on to each title. Then there was the little matter of Europe being left behind – forced to watch as the US and Japan got networked play first (unless they used unofficial convoluted workarounds). Connection issues dominated the agenda whereas, on consoles, you'd have expected a plug-and-play experience. One key game – *Resident Evil Outbreak* – even had to be stripped of its network-capabilities in Europe.

Yet Sony did learn from the experience. In 2006, it launched the PlayStation Network on the PS3 which finally provided the unified system that was sorely needed. The games that were released for PS2's online capabilities also helped break new ground and prove the appetite for online gaming was strong. *Final Fantasy XI*, for instance, was the first MMORPG to support cross-platform gaming between console and PC – something commonplace today. Its last official online server may have been turned off in 2016 but its legacy remains.

» The back of the network adapter which allowed for a broadband or dial-up connection.

PS2

HARDCORE HEAVEN

THE PS2 EXCLUSIVES THAT REMAIN UNIQUE TO SONY'S CONSOLE

GOD HAND

■ It's fair to say 2006 was a superb year for Clover Studios. It developed the sublime action-adventure, *Okami*, and then wowed gamers with *God Hand*, a quirky homage to the beat-'em-ups of days gone by. It split opinion, but its silly, no frills, repetitive nature nevertheless held some charm, even if your thumbs would blister by the end.

GRAN TURISMO 4

■ *Gran Turismo 4* raced into many a gamer's hearts and ended up becoming the third best-selling game on the PS2 (*Gran Turismo 3: A-Spec* was second). With 700 real cars to choose from, more than 50 tracks including Nurburgring Nordschleife in Germany and superb attention to detail, players could forgive the relatively basic AI and lack of car damage.

GRADIUS V

■ This 2D side-scrolling sci-fi shoot-'em-up felt reassuringly retro when it appeared in 2004 and that was certainly pleasing given its roots in Konami's 1985 classic. Its fast action almost left you wheezy as tough obstacles and enemies tested your reflexes to the max, while the inclusion of two-player simultaneous play let you share your shredded nerves.

MISTER MOSQUITO

■ Mosquitos aren't generally a heap of fun if you're on the receiving end of one of nature's blood suckers but if you're controlling the insects and targeting other humans, well that's a whole different matter. This short but kooky game had players collecting blood without stressing the victims and its emphasis on timing ratcheted up the tension.

> "SONY SAW AN OPPORTUNITY TO PARTNER WITH DEVELOPERS RATHER THAN BEING PROTECTIONIST AND FIGHTING AGAINST THEM. THIS HELPED US TO GAIN A LOT OF MOMENTUM AND IT FELT LIKE THE BEGINNING OF THE HANDS-ON, DEVELOPER-FRIENDLY ROLE THAT PLATFORM HOLDERS PLAY TODAY"
>
> DAVID DARLING

WE LOVE KATAMARI

■ Keita Takahashi's left-field sequel to *Katamari Damacy* was just as bonkers as the first game, getting players to once again roll an adhesive ball around the environment so that items smaller than the ever-increasing mass would end up sticking to it. Two-player co-op and competitive modes meant double the fun and critics could only applaud its sheer originality.

sectors." Even so, PS2 was more of a closed shop than PlayStation. It didn't have a direct equivalent of the Net Yaroze development kit that had appealed to hobbyists. Instead, there was a Linux kit which allowed the console to be used as a computer, providing an operating system, keyboard, mouse, network adapter and a 40GB hard disk drive. Harrison said there simply wasn't a business in selling semi-pro game dev tools to the consumer base and this pushed many in the homebrew community to the Xbox.

Not that development success is likely to have come easy even with such an equivalent. "To get the kind of performance that Sony demos were showing, you had to hit the metal – and hitting the metal was no mean feat," recalls Paul. "There was a certain type of person required to squeeze performance out of the PS2 and they were few and far between."

One with a good handle on things was Keith Judge who first used a PS2 devkit in 2001 at Rage Games' studio in Leeds when he was a young graduate programmer. "The PS2 was the first console I ever developed for," he says, "and I remember a lot of the documentation hadn't been translated into English or was incorrectly translated so we relied on the dev forums for information."

» [PlayStation 2] From encountering prostitutes to pulling hapless citizens from their cars, *Grand Theft Auto* moved up a gear with *Vice City* in 2002.

» [PlayStation 2] A PS2 exclusive, *God Of War* was released in 2007 at a time when the PS3 had made its debut, but it proved to be one of the console's best-ever games.

According to Andrew Oliver, the then cofounder of Blitz Games, **PS2 games took a few years to shine because the chips' features were beyond the tools that developers had access to.** It meant lots of new techniques and skills had to be learned to fully exploit the console's improved capabilities.

"The graphics chip was far superior to the first PlayStation which was 3D mapped in integers with 8-bit single textures," Andrew says. "The first PlayStation had some colouring from corners that developers would use for baked-in, pre-rendered lighting and every polygon was just printed, in full, in order, so a lot of care had to be taken to get their priorities correct. This often meant chopping up environments to lots of smaller polygons, but this was needed anyway since large textures would warp badly. PS2 fixed all of these issues."

In many ways, it served to frustrate developers who had not long got their heads around Sony's single-minded view that all games should be 3D. By the time the PS2 arrived, developers had already begun using complex tools such as 3D Studio Max as opposed to early Photoshop or DPaint 3 on the Amiga. Now they had to learn again.

"We'd just about got comfortable with 3D when the PS2 came along boasting higher fidelity 3D graphics and Maya was not the chosen tool that created far higher fidelity 3D models," Andrew explains. "But it was expensive and programming teams were often horrified at the complexity of 3D models artists wanted to import into their game engine."

Foibles included not have multiplicative blending 'out of the box' but developers were able to pull off effective tricks over time. "Managing texture memory was a dark art in order to have a high framerate and a lot of texture variety. You could make the platform sing, but boy you had to work for it," says Paul.

What the PS2 did have, however, was a vast amount of fill rate. "You could afford to render your visuals in multiple passes to create multiplicative lightmaps, light blooms and hazes," continues Paul, whose company developed *Harry Potter And The Philosopher's Stone, Rally Championship, Battlestar Galactica* and more.

It did mean publishers needed to throw more money at development but the potential rewards were great. "The PS2 pretty much required developers to jump in and get their hands dirty," remarks Codemasters cofounder David Darling. "There were people who were experts at that kind of low-level coding and they were lucratively employed just to code for some of the graphics chips." Sony understood the difficulties. It held its own developer conferences attended by hundreds of people. Studios were also allocated account managers and technical staff. "This was different from Nintendo where you'd either be in its dream team or an outsider, making it difficult to develop for its consoles," says Andrew. "Sega was in-between and had the aspirations to be as accommodating as PlayStation but it never had the budget and PlayStation was taking the best staff."

» [PlayStation 2] *FIFA 2002* continued the hit football franchise and yet it wasn't the best with *Pro Evolution Soccer*'s focus on real football as opposed to licences winning this time.

David Darling agrees. "Sony was really encouraging, motivating and helpful and it played a big role in developers wanting to work on the PS2," he says. "Sony saw an opportunity to partner with developers rather than being protectionist and fighting against them. This helped us to gain a lot of momentum and it felt like the beginning of the hands-on, developer-friendly role that platform holders play today."

What's more, Keith says it was fun to work on the PlayStation 2. "We'd find new ways to make things go faster and look better and share them with each other," he says. "It was clear a lot of thought had gone into its design so that each part of it could, with the right software, work to its maximum together."

Even so, developers looked for easier ways of making games and it led to a greater reliance on third-party engines, notably RenderWare. Prior to the PlayStation 2, developers generally wrote their own engines and, although they could use the low-level tools from the SDKs and utilise example code to draw models, set up textures and lights and so on, they were not enough for full-blown games.

"By getting a PS2 rendering backend written for RenderWare, Criterion nailed its flag to the mast," says Paul. This 3D API and graphics rendering engine was used by Rockstar Games for *Grand Theft Auto III* (as well as *Manhunt, Bully, Grand Theft Auto: Vice City* and *Grand Theft Auto: San Andreas*). "The use of RenderWare for *Grand Theft Auto* gave the engine credence," argues Paul. "If it was good enough for GTA, it was good enough for us."

Grand Theft Auto III made its debut on the PS2 in October 2001, ahead of a release on the PC

» [PlayStation 2] The PS2 got better with age as the award-winning *Shadow Of The Colossus* in 2006 showed – some six years after the console launched

▶ the following May and the Xbox in November 2003. It became an immediate classic, moving the *GTA* series into 3D and producing a game so monstrous of size that it changed the perception of what the PS2 could achieve.

"RenderWare was on version three when the PS2 was released," says David Lau-Kee, cofounder and CEO of the Criterion Software Group. "But PS2 represented the tipping point. The question we'd always asked was 'do you want to make games or make game engines?' because making and maintaining a game engine is a phenomenal undertaking. For the first time, that question had real resonance and we worked incredibly hard to give developers a choice to focus on gameplay versus engine tech."

As well as *GTA*, RenderWare stood out, in particular, within Ubisoft's *Rayman* and Konami's *Winning 11/Pro Evolution Soccer*. "Those were huge successes, in very different genres and both category leaders," continues David, proudly. "I remember there was a year when *Pro Evo* was generally considered to be better than *FIFA* and I loved feeling that we had contributed to that."

» [PlayStation 2] *Ico* proved that an artistic game was more than a perfect match for the PS2.

RenderWare dramatically cut development time, providing a vast breadth of graphics functionality and a deep toolchain that integrated many disparate parts of the development process, as David Lau-Kee explains. "This is something that is generally misunderstood – the expectation is that the core value is in the low-level graphics engine when, in fact, toolchain and workflow integration is actually the most essential characteristic."

So would the PS2's impact have been lessened if it was not for RenderWare? "I don't think so," continues David. "But the whole 'tools and middleware' programme at PlayStation was supported by Ken Kutaragi and orchestrated brilliantly by Masa Chatani. I think we played our part, particularly in making it accessible to a far larger developer community far earlier than would otherwise had been the case. But that was exactly as Kutaragi and Chatani intended so I think about it the other way around: without PS2, RenderWare would not have had the same impact."

Not that the PS2 was always about being technologically advanced. "We were a work-for-hire developer and you typically don't get to do the cutting edge technology games," says Rebellion Developments' cofounder Jason Kingsley, whose PS2 titles included *Judge Dredd: Dredd Vs Death*, *Sniper Elite* and *Rogue Trooper*.

For many developers and publishers, what the PS2 provided was a solid platform with a huge number of potential customers. It allowed creativity to flow and gambles to be made (Mark cites *Katamari Damacy*, a cult classic by Keita Takahashi). "There was a range of games and localised games," adds Ray. "The development community took the platform to heart."

Blitz epitomises this, making titles such as *Pac-Man World 3*, *American Idol* and *Zapper: One Wicked Cricket*. "We made 19 games on PS2 and all had good and bad aspects, technically, artistically, financially and commercially," says Andrew. "But the main thing the PS2 brought was larger, exceptionally well-crafted games with polished pre-lit 3D worlds and characters that looked silky smooth and often spoke."

Efforts were made to make playing games more comfortable and innovative. Sony released a new DualShock 2 which proved attractive to some developers. "I kinda loved the technical limitations that the PS2 offered compared to later consoles but I chose the console as the platform for my early work because both joysticks were not offset and that was very important for *Katamari Damacy*," Keita Takahashi tells us.

The addition of a USB port also widened options, particularly for peripherals. Alternative, family-friendly, mass-market controllers were made in abundance such as the EyeToy camera,

SERIES STARTERS

THE BIG GAMES THAT BECAME BIGGER FRANCHISES

GOD OF WAR

■ *God Of War* from 2005 was built on a simple enough hack 'n slash premise and involved lots of button bashing. But, under the direction of David Jaffe – fresh from the development of *Twisted Metal: Black* – its speedy combos, slick structure, smooth animation and easy flow created an instant classic.

KINGDOM HEARTS

■ Square released *Kingdom Hearts* in 2002 and it was a curiosity from the very start, combining characters from the *Final Fantasy* series with those from Disney – perhaps about as chalk and cheese as you'd get. But this action role-playing game with a healthy dose of hack 'n slash somehow worked.

MONSTER HUNTER

■ By no means a perfect game, *Monster Hunter* suffered as a single-player offline jaunt because it lacked some of the features and creatures of online play. When connected it began to shine, allowing for a fun adventure with other players and, as each sequel has shown, this provided the perfect base for a complex franchise.

DEVIL MAY CRY

■ *Devil May Cry* grew from the development of what should have been *Resident Evil 4* on the PS2. When it became clear that the new game wasn't going be in the *Resi* mould, it moved away from its horror survival roots and became an over-the-top, hack 'n slash action adventure packed with athletic moves and demons aplenty.

the microphone of *SingStar* and the big red buttons of *Buzz!* showed. "Those buzzers brought approachability," says David Amor, the then creative director of *Buzz!* creator Relentless Software.

"We'd worked exclusively with Sony on a DJ game and some versions of EyeToy and *SingStar* and we were talking to them about what we might do next," he continues. "They told us a company called Sleepy Dog had approached them with a licensing agreement for music clips and an idea to make a quiz game so we proposed a music quiz set in a TV gameshow but we wanted to make it about entertainment rather than be a music test.

"My business partner, Andrew Eades, suggested having buzzer peripherals and, while parts of the gaming press pointed out that they didn't add anything that couldn't be done with a regular controller, that was missing the point."

Once the PS2 established itself, there really was no going back. The console continued to make its presence felt, extending to 129 markets in Europe, the Middle East and Africa.

The PS2 also made a name for itself in other ways, not least through a 'radical' approach to advertising that included a tattooed baby, a man smelling underwear with a hand down his trousers and a strange orgy – a controversial approach that nevertheless gained attention.

There was even a story claiming Iraq's dictator Saddam Hussein bought 4,000 PS2s and was planning to build a crude military super-computer.

> "THE PRICE OF THE HARDWARE KEPT COMING DOWN AS MAJOR COSTS WERE TAKEN OUT OF PS2 EACH QUARTER AND THE MACHINE BECAME SMALLER"
> DAVID REEVES

No controversy seemed to dent the console's popularity, however, and Sony even made friends within the videogame sector that had arguably been most affected by the success of the PlayStation: the arcades. Namco adapted Sony's tech into the System 246 board that powered *Tekken 4* and *Time Crisis 3*, and was used by Capcom and Taito. Konami's Python hardware was also PS2-based. But it also worked on refining its core product, solving issues with PS2 heat dissipation by changing the chassis and consolidating the chip which, made manufacturing less expensive.

"The price of the hardware kept coming down as major costs were taken out of PS2 each quarter and the machine became smaller," says David Reeves of a console that sold for £99 in its slimmed-down form in 2004. "Piracy was gradually eliminated and PlayStation became a well-accepted brand, going as far as becoming a sponsor of the UEFA Champions League. We'd always have a big presence at E3, Gamecom and the Tokyo Games Show."

And this, arguably, is the secret of the PS2's success: a console which didn't rest and continued to be marketed and improved, becoming cheaper and expanding its market each year. Developers in at the start gradually became more familiar with the machine and produced ever greater titles.

"I think PS2 more than most other consoles had a massive gulf in quality between launch games and the games nearer the end of its lifetime as this process of understanding its nuances continued for years," says Keith.

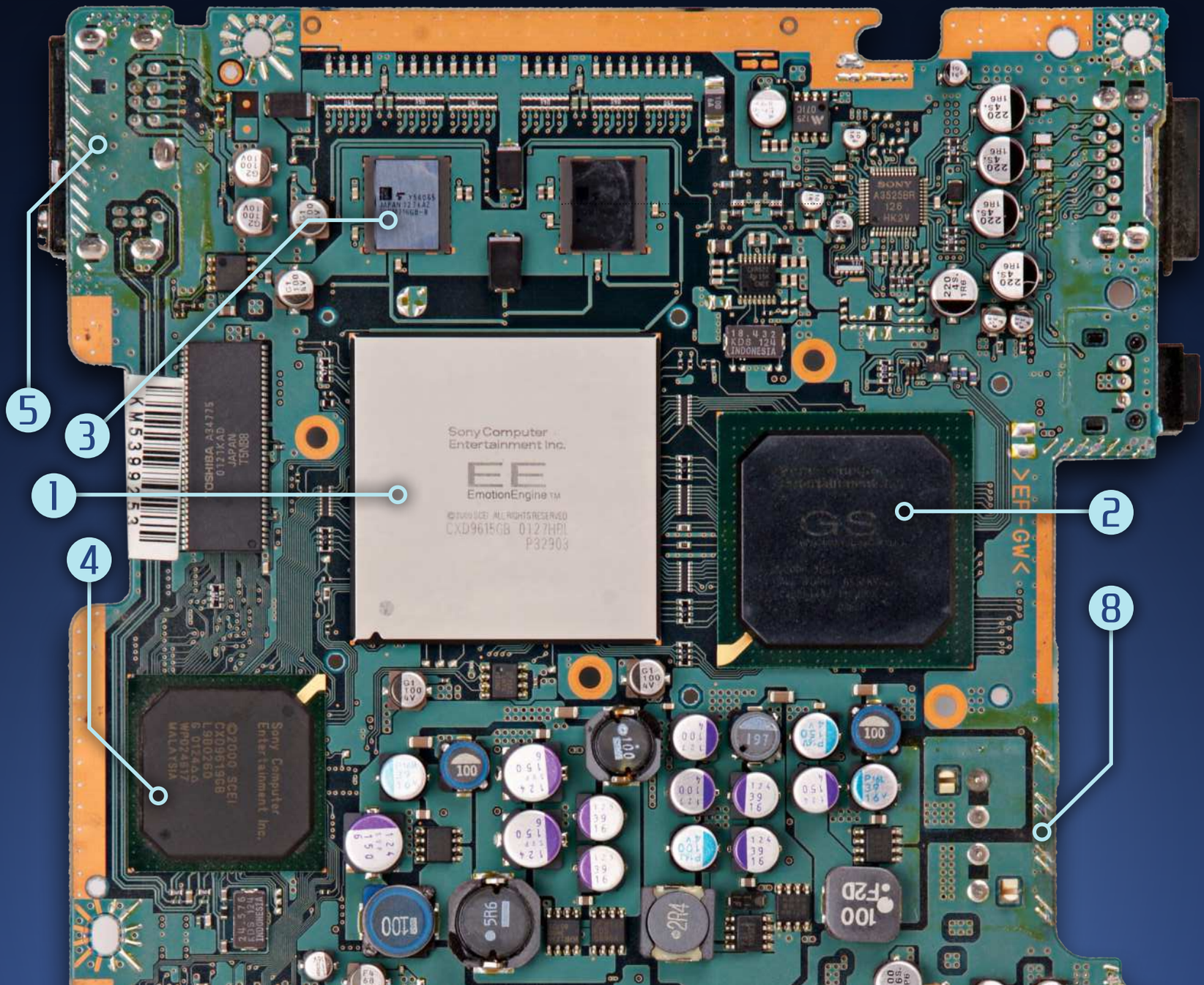
Indeed, with a bigger market than Xbox at the time, PS2 simply established itself as the console of choice for so many developers. "In retrospect, PS2 really was the Goldilocks console – not too much to handle and a good return for the time invested in it," says Mark. "I think that had a lot to do with it becoming the most successful console of all time." *

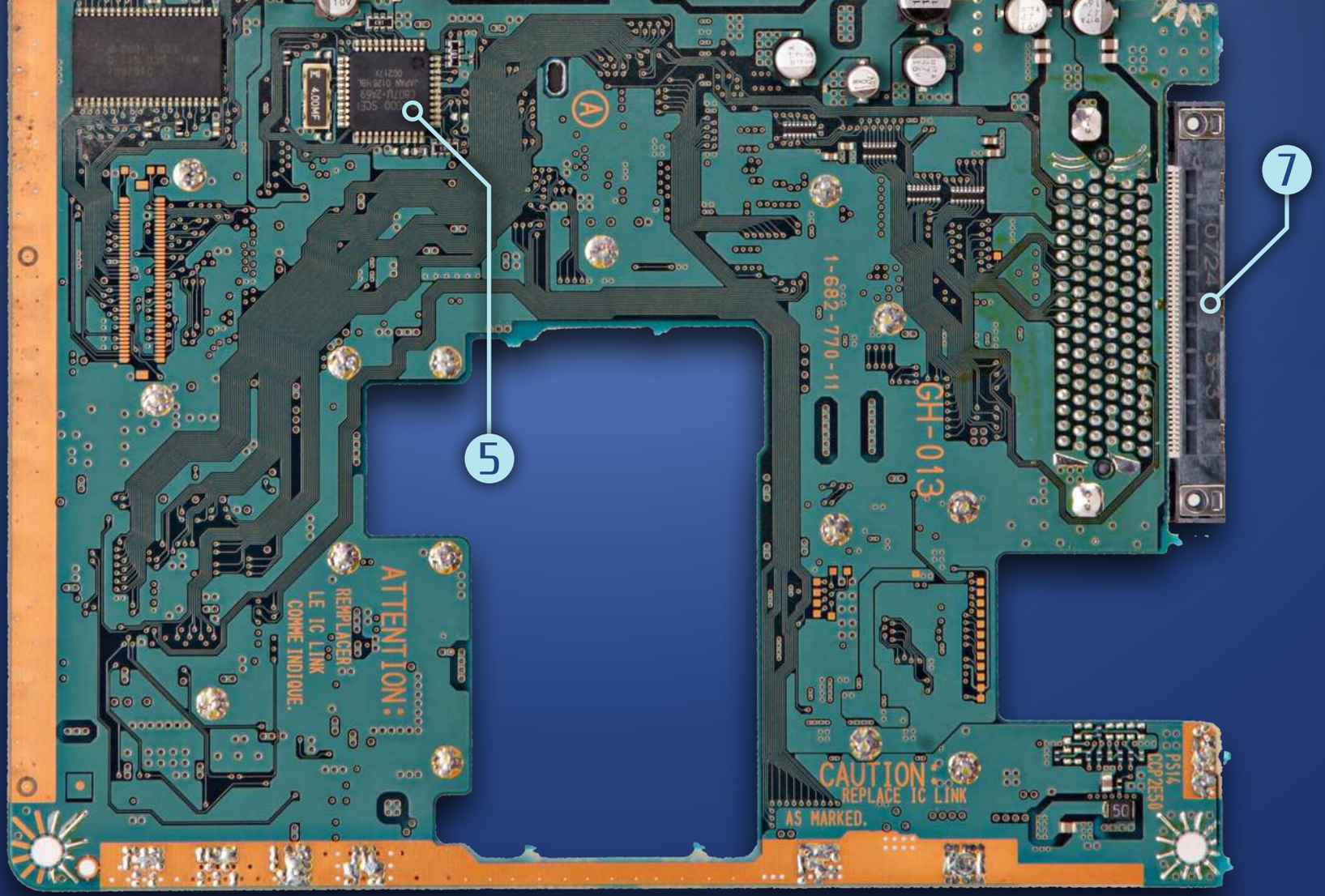
YAKUZA

■ A beat-'em-up based on Japanese mafia crime dramas, this linear game by Sega is driven by its story and there's enough action to sink your fists into as you explore its open world. It's high on interaction, allowing you to chat with NPCs, buy items from shops and visit seedy joints, making for a compelling mix that remains popular today.

UNDER THE HOOD

HOW SONY POWERED ITS SUPER SEQUEL





1

EMOTION ENGINE

■ Developed by Sony, the Emotion Engine is a chipset running at ~294.912 MHz that includes a CPU core, two Vector Processing Units, a 10-channel DMA unit, a memory controller and an Image Processing Unit.

2

GRAPHICS SYNTHESISER

■ With 4MB of DDRAM and running at ~147.46 MHz, the Graphics Synthesiser is a GPU which handles various hardware effects such as transparency, perspective correction, mip mapping and 3D Bezier surfacing.

3

ONBOARD MEMORY

■ Sony's popular console is fitted with a total of 32MB of main memory, which is made up of two 16-bit PC800 RDRAM chips (in comparison the Dreamcast has 16MB). It allows for a memory bandwidth of 3.2GB/s of memory.

4

INPUT OUTPUT PROCESSOR

■ The I/O processor actually has an original MIPS R3000 at its core – the same as that found in the debut PlayStation. It's underclocked to allow backwards compatibility with original PlayStation videogames.

5

BLISTERING SOUND

■ The Sound Processing Unit 2 consists of two PlayStation sound chips combined with extra on-chip RAM. It can handle 48 channels of DAT quality audio and output to a Dolby or DTS 5.1 surround sound system.

6

FRONT PORTS

■ As well as two handy USB ports (which were often used for peripherals) and a memory card slot, the PS2 has an i.LINK port – Sony's name for FireWire. It allows digital data to be transferred between devices.

7

EXPANSION BAY

■ A 3.5-inch drive bay allows a network adapter and HDD to be installed in the back of the console. Games were released in North America and Japan to take advantage of this and included *Final Fantasy XI* and *Ace Combat 4*.

8

COOL RUNNING

■ All these components mean the PlayStation 2 could – like the original PlayStation – get very hot, so a 50mm fan was used to keep things cool. Blocking the fan's vent is a sure way to kill your beloved console.

The Story Of Prince of Persia: The Sands of Time™

It was the 2003 reboot of the franchise which began in 1989 and it had gamers leaping for joy - as well as running along walls and rewinding time. Fast forward to today, and it's about to get another outing thanks to a full official remake

WORDS BY DAVID CROOKES

PATRICE DÉSILETS

Canadian game designer Patrice Désilets is open and honest. "I wasn't a fan," he says of the original *Prince Of Persia* – the cinematic platformer designed by Jordan Mechner in 1989. "I played it when I was 26 or 27 years old and I was like, 'Holy cow, people say that game is great?'"

In Patrice's mind, time had lessened the game's impact. He'd played it some ten years after release, when the appreciation of its groundbreaking rotoscoping, engaging sword fights and mix of puzzles had perhaps waned with the dawn of 3D console classics such as *Tomb Raider*.

"Nostalgia," he offers, by way of explanation. "It's not because it's a good game now, right? It's like, 'Oh yeah, the character moves really well but, damn, it's frustrating.'"

Such an admission is perhaps surprising. After all, *Prince Of Persia* not only spawned a franchise published by Brøderbund, it also happened to be bought by Ubisoft and rebooted – at the hands of Patrice himself. In fact, the equally innovative action adventure *Prince Of Persia: The Sands Of Time*, released in 2003 for all of the major platforms at the time, also ended up being his first hit. If Patrice – creative director on *Sands Of Time* – doesn't appreciate the original game itself, then he is certainly thankful of its legacy.

"I took the fundamentals of *Prince Of Persia*," he recalls, later taking it further by helming another huge hit, *Assassin's Creed*. But how did the game come about and where did the innovative ideas it incorporated spring from? For those answers it's wise to rewind time to the beginning of 2001, when Ubisoft called Jordan Mechner with its intriguing yet troublesome proposal: to resurrect the Prince in a new 3D game.

Jordan had been here before. The Prince's last outing in 1999 was an ill-fated 3D version for Windows (and later the Dreamcast) which Jordan disliked (and continues to swerve). Ubisoft, however, had big plans for the game's continuation and it needed to get the original creator on board. It owned the rights to the *Prince Of Persia* name, it transpired, but Jordan Mechner held the IP.

Ordinarily, such things would be quickly resolved. Yet if the man who created *Karateka* while at Yale University and whose previous videogame project was the $5 million flop *The Last Express* in 1997 was to give the proposed reboot the nod, then he had to be convinced that any new team and direction would do his baby justice. And there was no indication that he was in any way desperate to get back into videogames.

After creating *Prince Of Persia* and its first sequel, *Prince Of Persia 2: The Shadow And The Flame*, released in 1993, Jordan, who had attended film school at New York University, shot the documentary *Waiting For Dark*. The call from Ubisoft came as he was working on another doc, *Chavez Ravine*, and he certainly was happy to be away from games at that time.

As such, the onus was on Ubisoft to convince him otherwise so Jordan was invited to the company's head office in Paris to meet its president and CEO, Yves Guillemot. Following a lavish PowerPoint presentation, Jordan asked for more details about the people being assigned to the game's development, so Ubisoft asked producer Yannis Mallat to assemble a three-man team in Montreal, Canada, and they worked on a concept.

Yannis arranged to meet Jordan at E3 which took place at the Los Angeles Convention Center between 17 and 19 May 2001. After a conversation lasting two-and-a-half hours, it was decided that Jordan should fly to Montreal a few weeks later to see the design for himself. This gave the team time to refine the concept, only Yannis wasn't convinced that the design document – rolling in at a

JORDAN MECHNER

» [PC] The Vizier is a tricky old sorcerer who manages to protect himself while producing clones to do battle with the Prince.

A Prince Amongst Videogame Heroes

We like the way he moves...

Leaping over gaps

Missing bits of the floor? No worries for the Prince. He can athletically hurl his body across manageable gaps and soon get on his way.

Sky-high attacks

When battling enemies, his sword drawn, the Prince can take a foe by surprise by leaping over the fool and striking them from behind.

Run along walls

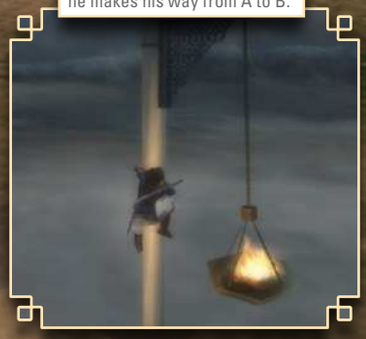
Gap a bit too wide? Our hero can take to the walls, running along them until he reaches the other side, or prepares for another move.

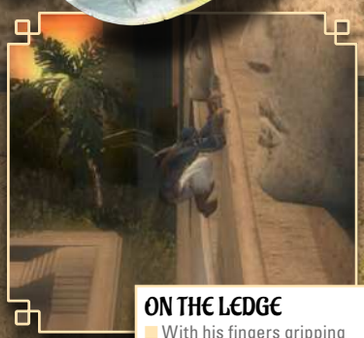
Climbing ladders

Although there's a lot of climbing up walls and making use of the environment to get around, a few well-placed ladders come in handy.

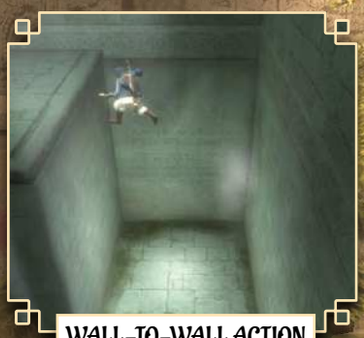
Every column inch

The Prince can make use of the many columns in the game, clambering up them and leaping from one to another as he makes his way from A to B.





ON THE LEDGE
With his fingers gripping tightly, the nimble Prince can make his way across the ledges found around the palace's walls.



WALL-TO-WALL ACTION
To make his way up tight spots, the Prince can leap left and right from one wall to another in order to speedily get to the top.

JUST HANGING AROUND
If there's a pole, then chances are the Prince is going to be able to grab hold and swing himself up and over as leverage for a cool leap.

weighty 300 pages – contained anything particularly innovative. He felt the concept simply retrod familiar platforming ground, so the team was axed and new blood was brought on board in the hope of an early rescue.

"Jordan had given Ubisoft a ruleset for *Prince Of Persia* – the pillars of that game: the quality of the animation, puzzles and the difficult fights," Patrice Désilets recalls. The revised team worked on that basis. "And then Jordan came to Montreal and loved what was being worked on." But what was it that caught his imagination? Quite simply, the idea of the Prince being some kind of Persian ninja.

"The animation took the action vertical – the character was running up walls and bouncing from one wall to another using Cirque Du Soleil acrobatics," Jordan recalls, having watched an impressive yet simple silhouetted set of animations by artist Alex Drouin that showed how agile the Prince could be. "It made the action feel more extreme and it really looked like it would unlock the gameplay." Jordan was soon reaching for a pen

"The challenge was to replicate the fluidity of the 2D game by chaining moves together very fast in a 3D world – something Brøderbund hadn't achieved," Jordan recalls. Working on this basis, development began properly in September 2001 and the challenge was to take those prototypes and turn them into a groundbreaking game – never the easiest of tasks.

That said, Patrice didn't feel burdened by the *Prince Of Persia* games that had come before. "There was no fan arc with *Prince Of Persia* [before *Sands Of Time*]," he says. "It wasn't like, 'Oh what if this is what is really important?' or, 'I remembered my emotion when I played it.' No, no, no. It was just like, 'Okay, it's a guy stuck in a palace.' We were being given a licence, an IP to start with and we could do what we wanted."

Certainly, nobody was laying any real expectation on the shoulders of this young team. None had shipped a triple-A game before but they were enthusiastic, talented and hardworking. Prior to this title, Patrice had worked on *Donald Duck: Goin' Quackers* and he was assigned to *Prince Of Persia: The Sands Of Time* because he didn't have another project. "*Sands Of Time* felt the same as *Donald Duck*," he says. "We were using a character that had been established."

Patrice had little time for formal planning. Unlike the initial group

» [PC] The interaction between the Prince and Farah is humorous and helpful, creating a medium that makes exposition dumping feel more natural.

assigned to work on the game, talk of creating big documents was dismissed. "We did some design on paper but it wasn't fleshed out and we didn't go for a PowerPoint," Patrice recalls. "It was about action and about what was going on in a room. At first we were a small bunch of people from different crafts building a game together – somebody doing 3D while we were designing and going through the core narrative of the game. We knew which rooms we would build inside the palace and had an idea of the overall flow. Most of the development was about the pattern of getting things on-screen as quickly as possible."

Many ideas were thrown around. Most of them were chucked out. "One of the things that I wanted to do was put lots of people inside the palace but we couldn't do that because of the PlayStation 2's capabilities for rendering and whatnot," Patrice says.

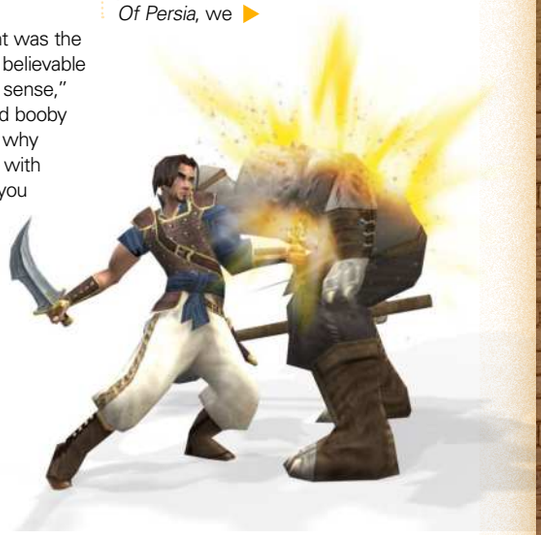
Instead, the game was kept simple and revolved around some important elements: fluid movement, fighting, puzzles that relied on acrobatics, and a fair few brainteasers typical of adventure games. Another crucial addition would come later and turn everything on its head...

"What was really important was the idea that the game had to be believable – the palace needed to make sense," Patrice continues. "So we had booby traps but then we'd question why anyone would live in a palace with booby traps. And okay, cool, you can run on walls. But who lives in a palace where you had to run on walls to get to your room?"

The developers also wanted the main character to be grounded. "We worked hard on the quality of animation and the believability of the Prince even though he's running up walls," Patrice says. "It was a bit like parkour before the parkour trend, and one thing I remember from Jordan one morning was the suggestion it would be really interesting if we only stay in the palace and have a unity of action, characters and place."

Patrice and Jordan got on well. "I'm not starstruck often… well, ever, and so for me it was like, 'Yeah, it's Jordan and he became my friend pretty quick," Patrice says. Jordan was involved as a consultant and he worked from his home in Los Angeles, visiting Montreal every so often. As such, the main decisions were being made in Canada, and one of them was the use of the Jade engine which had been designed by Michel Ancel for *Beyond Good & Evil* – and which needed to cope with a key mechanism that would raise the game to another level: the ability to rewind time. This was something which helped avoid death while encouraging experimentation and it felt groundbreaking.

"This came after we had created something that we could play," Patrice explains. "We found we were dying a lot because the game wasn't easy and, just as in the first *Prince Of Persia*, we



found this was boring – dying isn't particularly fun. Since *Sands Of Time* was about getting from point A to point B in 3D, we were starting from the beginning about ten times and finding we didn't want to continue." The rewind feature solved the problem, but it also changed the entire direction of the game.

By allowing the player to rewind from a mistake, gamers could effectively make their own checkpoints on the fly. It was by no means simple to implement, but lead programmer Claude Langlais believed he could get the ambitious rewind feature to work with the Jade engine.

"It was the main challenge," highlights Patrice. "You have to understand that the PlayStation 2 had 32 megabytes of RAM and that five megabytes was used by the operating system. We needed five megabytes to record the stuff that could be rewound and that didn't leave a lot left for everything else."

Even so, Claude achieved his aim and Jordan was impressed. "You'd press a button on the controller and turn back time while holding it down and that was a huge innovation and very exciting," he says.

Ubisoft executives also loved what they saw (animator Alex Drouin had worked with AI coder Richard Dumas on the creation of a responsive character) but, rather then speed up the preproduction process, the team secured another three-months of preparation work. The priority now was to 'pretty up' the rough graphics and give the game some style.

Raphael Lacoste was hired as the game's art director, leaving his job as an environment artist for Kalisto Entertainment in Bordeaux, France, and joining the team in April 2002. His late appointment was far from ideal – up to that point, there had been next to no art at all, just monochrome textures and basic blocks, and so it was a case of hitting the ground running in the hope of quickly finding a suitable style.

Thankfully, Raphael brought a beautifully dark dimension to the graphics, creating a mature Prince in a consistently beautiful world with billowing silk, lightmaps and a variety of environments, despite its single setting, complete with filter, glow and volumetric fog. "At the time, it was really good looking," says Patrice. "It was becoming something that people would want to show their friends, saying, 'Holy cow, come to my house because I have this beautiful game.'"

Less impressive, however, was the storyline. "Nobody on the team was happy with it," says Jordan. "They knew they needed a different story and they were very happy when I told them that I wanted to do it."

There was a strong desire to build the game around the rewind feature, as Patrice explains: "The Sands Of Time became the mechanic and the game was about telling the story of the mechanic. It all began to make sense and it allowed us to put a modern idea into a fantasy game."

At no point during discussions did Jordan want to turn the Prince into a superhero with time-rewinding powers. Instead, he wanted to bestow this capability on to an artefact: the Dagger Of Time – the only vessel, other than the Hourglass Of Time, which was going to be capable of holding the powerful Sands Of Time.

Whoever had possession of this could slow, freeze, fast forward and reverse time, and it also allowed the Prince to gain a vision of the future which would help the player see the

» [PC] The Hourglass Of Time contains the Sands Of Time which, when released, causes chaos in the palace.

» [PC] Sand Vultures can be outrun but it's always more fun to go on the attack.

» » [PC] Puzzles are as much a part of *Sands Of Time* as the combat, including switches that would open doors.

» » [PC] The game makes great use of the environment to produce a vast platforming playground.

THE PORTABLE PRINCE

Got time for something slightly different?

■ **Making use of a 2D perspective, the Game Boy Advance version of *Prince Of Persia: The Sands Of Time* feels like an entirely different game to the other console iterations, despite overlapping similarities.** It welds the mechanics of the original game with key elements of the 2003 reboot, introducing players to new skills in the guise of scrolls placed around the palace.

Released at a similar time to the the PS2 version, it includes the exact same story and the gameplay is no less compelling. Players need to leap around platforms, climb columns, avoid large falls and cunning traps, and swashbuckle against an assortment of enemies, figuring out how to get from A to B with switches and the same ability to extract sand from those the Prince fells.

It doesn't take long to get a hold of the rewind feature. Tap the left shoulder button at the right time, and the Prince will go back to the point before a mistake was made. But that isn't its only use. It can also help to solve puzzles, which gives it an added dimension not explored elsewhere. Farah also helps the Prince to progress. After meeting her, the player is able to switch between the two heroes and make use of her bow and arrow. Time has been kind to this game.

» [PC] Running along walls is necessary as a way of getting past numerous obstacles and traversing the palace.

» [PC] The first big battle in *Sands Of Time,* introducing the wheeze of having to stab the enemy with the dagger to draw out their sand.

course they had to traverse in the next section of the game.

"My first challenge as a scriptwriter was to come up with a story that had the right level of complexity and gameplay," Jordan explains.

"So, in the game, you could turn back time up to 30 seconds and, the story, by extension, suggested terrible mistakes made a week or month ago could also be undone," he continues. "It was about saving the people in your life and resolving the consequences of your actions which I think is something we can all identify with. The story works because there is harmony between the macro and the moment-to-moment gameplay."

Jordan was inspired by the *Shahnameh*, a literary masterpiece by Persian poet Ferdowsi, he set the game in the ninth century and told of the Prince looting the dagger from a captured Indian kingdom, only to be tricked by the Vizier of a local Maharaja into releasing the Sands Of Time. Everyone in the palace is turned into a sand creature, except the Prince, Vizier and the Maharajah's daughter Farah. Cue the Prince's need to go back to the moments before the fatal mistake was made.

» [PC] Players can encounter 12 varieties of sand creatures, including the common axe sand creature (left) and the red sand guards (right).

» [PC] Is this a dagger the Prince sees before him? Of course it is, and he now has the ability to rewind time.

"We knew there were only going to be a couple of characters on-screen at once," Jordan says, "so I had to make practical story decisions. It wasn't going to be the kind of game where you're moving through a crowd and talking to people, deciding who to have a conversation with. We really wanted to put the emphasis on an acrobatic character who could respond quickly to keyboard inputs, and who you could use to chain movements together fluidly while avoiding the monsters trying to kill him."

As the plot evolved, the questions flowing through Patrice Désilets' mind were answered, one by one. "The Sands Of Time destroyed the palace, so the staircases and hallways had been ruined and you had to find a way to climb up the walls or jump between the columns," Jordan explains. By ensuring Farah didn't become a sand monster, a relationship between her and the Prince could be formed, one which drew on guilt and conflict. By having the pair converse while the game was being played, it allowed for exposition dumping through dialogue as well as helpful advice, banter and co-op puzzling in a single-player game.

Jordan told the story in the past tense. "I also wanted to give the Prince the kind of dialogue a ninth century Persian warrior would have," he says. More than 1,000 lines of dialogue were written, although only half made the cut. "That's normal and it was a matter of budget and schedule," he adds.

Jordan supervised the voice recordings. American voice actor Yuri Lowenthal provided the voice of the Prince, Joanna Wasick played Farah, Barry Dennen voiced the Vizier and William Frederick Knight and Warren Burton became the Sultan and King Sharaman. Other actors were brought on board for recordings in French, Spanish, Italian and German.

"It was just like a film shoot where you'd explain to the actors where their character is in each moment and where they're coming from," Jordan says. "I'd work over the shoulder of the sound engineer, we'd label the tapes and put them in a spreadsheet and I'd work with the programmers to make sure it was clear where everything we recorded would be used."

Jordan was also involved with the AI aspects of programming. "There's a banter in the relationship such as, 'Why are you going that way?' or, 'You've already been up here, what's the matter with you?'" he says. "These need to be triggered and carefully defined in the character AI because if there's a bug and the character says a line at the wrong time, it breaks the whole reality of the story."

In crafting the plot and the game, the developers were influenced by the PS2 game *Ico*. "It brought about the sense of the characters being in it together and we wanted a more Hollywood version of that dynamic," Jordan says. Cutscenes were deliberately kept short and only used when they were needed to advance the story. If a cutscene increased player investment in the gameplay that followed, then it was retained.

"The cutscenes were outsourced and they didn't have the consistency of the production values that we had hoped," Jordan says. "But the FMV was out of our hands. The audio helped bring a cinematic value to the game, though."

While Jordan worked on the plot, the team developed the fighting elements of the game, basing it on a martial art called capoeira which combines dance, acrobatics and music. Players would fight against both human and animal sand creatures and they had to ensure an enemy was finished off by stabbing them with the Dagger Of Time to retrieve their sand. This would allow use of the dagger's powers – each full power tank of sand allowed for a ten-second rewind.

"We worked hard on the camera," Patrice Désilets says, opting for one which would move with the player. "*Mario 64* had given us answers in 1996 but we were still trying to figure a control scheme and angles, asking what would happen if the player goes 180 degrees with the left stick – how does the character turn? Is the camera following? We spent a big amount of time working on the camera, mostly with the fighting."

Different fight systems were created and rejected as the developers looked to perfect AI and animation, with enemies needing to surprise players and complement the Prince's combat skills. Fight locations were plotted on top-down plans to figure which also indicated where the acrobatics were needed and, to help bring the game to fruition, the team was hugely expanded from seven to 50 by July 2002.

Even so, at the start of 2003, the Jade engine was creaking at the seams. It was unable to withstand the demands being placed upon it and an alternative was urgently needed. It was the last thing the development team needed but it was replaced by a 3D rendering engine created by a Ubisoft team in Shanghai and this ▶

Beyond The Sands Of Time

Prince Of Persia: Warrior Within

YEAR: 2004
SYSTEM: PS2, Xbox, PC, GameCube
■ This sequel to *Sands Of Time* continues the story, introducing new combat and lengthening the campaign. As he flits between the past and present, the Prince can make use of two weapons at once and enjoy dozens of combos to see off the trickier waves of enemies.

Prince Of Persia: The Two Thrones

YEAR: 2005
SYSTEM: PS2, Xbox, PC, GameCube
■ Bringing the trilogy to a satisfying end, this game sees the Prince become more athletic than ever before. It also sees him struggle with himself, his personality split with that of the Dark Prince – an arrogant, stronger alter ego whose Daggertail weapon also helps in puzzle-solving.

Battles Of Prince Of Persia

YEAR: 2005
SYSTEM: Nintendo DS
■ Completists out there should play this turn-based strategy game because the story is set in the period between *Sands Of Time* and *Warrior Within* but it's really a riff on *Advance Wars* and – with poor graphics and card collecting thrown in – not a particularly inspiring one at that.

Prince Of Persia Classic

YEAR: 2007
SYSTEM: PS3, Xbox 360, iOS, Android
■ We're harking back to 1989 here with a rather faithful remake of the debut game, albeit with extra moves, the ability to run up walls and graphics that brings the palace to life like never before. Checkpoints make dying a lot less frustrating and combat feels more fluid and refined.

▶ allowed the game to run faster than before. Work on a standout level was completed in time for that year's E3 where the game took pride of place in its own booth, playing on 50 screens.

"We weren't supposed to be the big game but we became it," says Patrice. "People at the show were saying, 'You've got to see that *Prince Of Persia* – there's a rewind feature and it's awesome.' But, coming back, we were told it had to be finished that year and so we had to make the hard decision to cut some portion of the game to finish it."

Jordan temporarily moved to Montreal with his family to help with the game's final push. And while the development team yearned for the deadline to be knocked into 2004, November 2003 became a firm deadline.

Every week another level of the game had to be locked in. "The textures, the lighting, the extra bits of dialogue had to be finished, never to be touched again," says Jordan. "E3 had put the pressure on and, you know, it was hard. Even when people are young and have lots of energy, it's hard on relationships and health. You come home still living, sleeping and breathing the pressure but we knew we had to ship and we did."

The PlayStation 2 version was released first on 10 November 2003, followed a week later in the US on GameCube and Xbox and the following month for Windows PCs. Sales reached 2.4 million by the end of March 2004 and Ubisoft heralded it a major success. "It was my first big breakthrough as a developer. I'd learned so much and it has stayed with me somehow," Patrice says.

And yet that's not the end of the story, because Ubisoft has been rewinding time yet again by assigning its team in India to work on a remake. It's the first time the developer has attempted such a thing and it's due for release in early 2022, making use of the same engine as *Assassin's Creed Origins* and rebuilding the original from the ground up.

"The old engine could not be upgraded to work on modern machines and the audio files were not recorded at a quality they could use," Jordan says. "So the whole thing has had to be redone in a modern engine but these are not new levels or a new story. It's a modern version with simple combat but it's much more beautiful and immersive and the camera work is better."

» [PC] The first half-hour or so of the game introduces you to its basic elements while leading you towards its pivotal moment.

Jordan was involved during the preproduction stage. "They reached out a couple of years ago and asked if there were things we had to cut back on during the original production and whether there were things that could have been done better," he says. "I told them I wanted to see improved cinematics. I also raised the idea of the Prince choosing wild animals as a gift for the Sultan – we had hoped to include that in the original gameplay but didn't have time to build a 3D tiger," he continues.

Jordan shared the original script and the dialogue spreadsheet – "everything I had in my archives". He introduced the new team to Yuri Lowenthal who has reprised his role as the Prince, this time performing using motion capture, although Jordan's involvement stopped there. "It was just a matter of how well they would be able to achieve it but that was something I couldn't really help with so I left them to it," he says.

Interestingly, the original 1989 classic is also available to play within the game (just as an unlockable bonus level based on the original was included in *Sands Of Time* the first time around). It shows that you can't keep a good game down, no matter when it was made. For there's no doubt that both the 1989 and 2003 games will be forever remembered. "This is the moment to rewind and look back," Jordan says. "And I'm very happy to see *Prince Of Persia* is still being talked about." ✱

PRINCE OF PERSIA HAS BEEN AROUND FOR A WHILE

PRINCE OF PERSIA

YEAR: 2008
SYSTEM: PS3, Xbox 360, PC, Mac

■ Another reboot of the *Prince Of Persia* franchise throws players into a cel-shaded world and partners the main character – still able to rip acrobatically around his environment – with a woman called Elika who will step in when the Prince is hurt and always save him from death.

PRINCE OF PERSIA: THE FALLEN KING

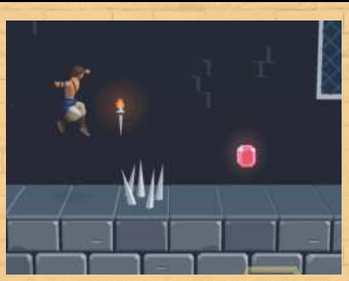
YEAR: 2008
SYSTEM: DS

■ Awkwardly forcing the player to control the game using the Nintendo DS's stylus, this side-scrolling platformer looks like an unsatisfying nod to the original, with its spike-laden traps, falls and ledges to climb. It features decent puzzles at times but ultimately it feels way too repetitive.

PRINCE OF PERSIA: THE FORGOTTEN SANDS

YEAR: 2010
SYSTEM: PS3, Xbox 360, Wii, PC, DS, PSP

■ Ubisoft decided not to continue with the story of 2008's *POP* and instead went back to the *Sands Of Time* continuum to explore the rivalry between the acrobatic warrior and his brother. Linear but with a true feeling of progression as you unlock new abilities, it displays great promise.



PRINCE OF PERSIA ESCAPE

YEAR: 2018
SYSTEM: iOS, Android

■ Feeling like a cash-in of a well-known franchise, this plodding side-scrolling runner could have done with more time – more time to improve the graphics and more time to instil it with some sort of heart. It draws inspiration from the 1989 game but imprecise controls sap the fun away.

COMING FULL CIRCLE

Prince Of Persia's crowning glory is its influence

■ **Patrice Désilets, the creative director of *Sands Of Time,* wasn't keen on reprising his role on another *Prince Of Persia* game unless he could take it in a different direction.** Rather than place the Prince at the heart of a new game, his idea was for players to assume the role of an assassin for a nonplayable AI-controlled child Prince. The aim would be to rescue and lead the Prince to safety. But, after a year of preproduction on what was tentatively called *Prince Of Persia: Assassin*, Ubisoft called a halt saying it wanted the player's focus to be entirely on the Prince.

By this stage, Jean-Christophe Guyot had taken on the role of creative director for *Prince Of Persia: Warrior Within*. Ubisoft's eyes were also on the next generation of consoles: the Xbox 360 and PlayStation 3. Rather than scrap Patrice's proposals, they were built on. "They asked me to evolve the game for the next gen," he reveals.

It meant creating a new engine, codenamed Scimitar, capable of creating a sandbox world for a free-running protagonist. The Prince was taken out of the picture and the game was set in the Middle East during the Crusades. *Assassin's Creed* was duly born.

"Everything I wanted to do with *Prince Of Persia: The Sands Of Time*, such as adding crowds, I could do in *Assassin's Creed*," Patrice says. "In *Sands Of Time* we had designed a village in the bottom of the palace where the player could run on rooftops, and we said we're going to have that in *Assassin's Creed* and create a city setting."

Scimitar was also used for 2008's *Prince Of Persia,* and it evolved into the Anvil engine before being used for *The Forgotten Sands* in 2010. Used for all *Assassin's Creed* games, it is now up to AnvilNext 2.0 – the engine powering *Prince Of Persia: The Sands Of Time Remake*.

TURNING BACK TIME

Pierre-Sylvain Gires discusses the upcoming Prince Of Persia: The Sands Of Time Remake

Why is now the perfect time to bring *Prince Of Persia* back?
There are so many players that wanted to play *Prince Of Persia: The Sands Of Time* again. It's something that they kept asking for years, and so Ubisoft has listened to the fans. We wanted to bring them their favourite game again on new platforms and that's why it was the right time.

Working on remaking a beloved game must be daunting…
I grew up with *Prince Of Persia: The Sands Of Time* and I think that game gave me the desire to work in the gaming industry. There has been a little bit of pressure, obviously, to touch such an iconic game, but you just have to take the challenge and we actually were very happy to work on this project.

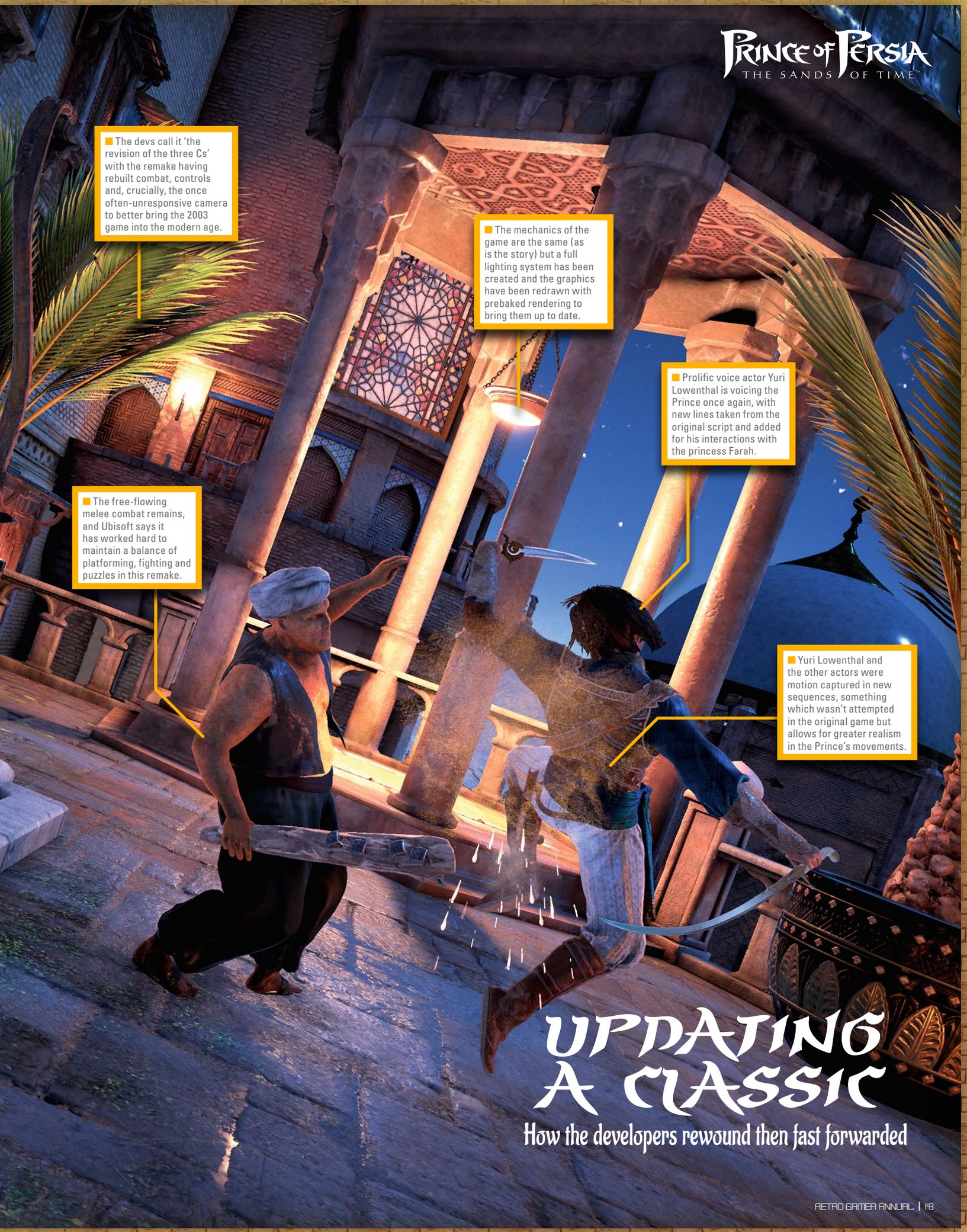
Have you drawn on Jordan Mechner's expertise?
We were in touch with Jordan Mechner during preproduction to see what we could improve, and having his input as the 'father of the Prince' was essential. We had the chance to work with Yuri Lowenthal again, too.

Is it a one-for-one remake or a spirited reimagining?
The remake is a huge market now and we rebuilt the game from the ground up, using a new engine that was used for *Assassin's Creed Origins*. But regarding the narration, we stay true to the original. The game is so strong, the narration is so beautiful, that we stick to the gameplay and the matrix of the original game, but we definitely had some new dialogues that were on the original script but not present on the original game. We also brought things from the original design and things that we change a lot for the game to make it more accurate for the players: especially the combat and the camera that we revisited a lot, because we wanted to really improve and enhance the velocity of the Prince, but also the control for the player and the responsiveness for the player.

What should an *Assassin's Creed* player, who has never played *Prince Of Persia*, expect from *Sands Of Time*?
I think *Sands Of Time* was perfectly balanced and it's the balance between the platforming with the combat and the puzzles – plus the beautiful narration between the Prince and [Farah] which is like a true movie. *Assassin's Creed* is, of course, 'the son of the Prince', but *Sands Of Time* is not an open world. It is very different in terms of gameplay and approach for the balancing of the game. ✱

Read more about *Prince Of Persia: The Sands Of Time Remake* at *Gamesradar*, wall-run your way over to bit.ly/gr_prince.

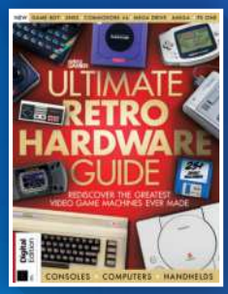
■ Farah was originally voiced by Joanna Wasick but Supinder Wraich has taken over the role here. You can still rewind to the past, though: you can opt for original mapping and even play the original *POP* (albeit the 1992 Mac version).


PRINCE OF PERSIA
THE SANDS OF TIME
The devs call it 'the revision of the three Cs' with the remake having rebuilt combat, controls and, crucially, the once often-unresponsive camera to better bring the 2003 game into the modern age.
The mechanics of the game are the same (as is the story) but a full lighting system has been created and the graphics have been redrawn with prebaked rendering to bring them up to date.
Prolific voice actor Yuri Lowenthal is voicing the Prince once again, with new lines taken from the original script and added for his interactions with the princess Farah.
The free-flowing melee combat remains, and Ubisoft says it has worked hard to maintain a balance of platforming, fighting and puzzles in this remake.
Yuri Lowenthal and the other actors were motion captured in new sequences, something which wasn't attempted in the original game but allows for greater realism in the Prince's movements.

UPDATING A CLASSIC

How the developers rewound then fast forwarded

Discover the origins of all your favourite characters



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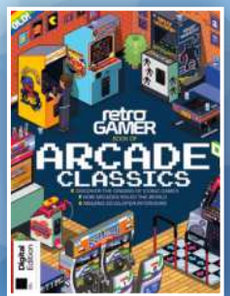

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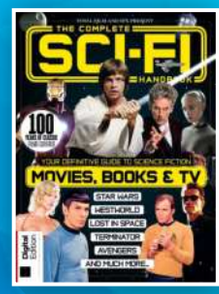

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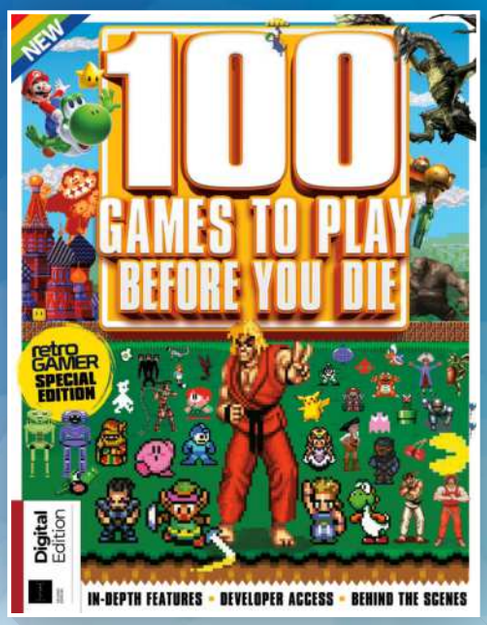

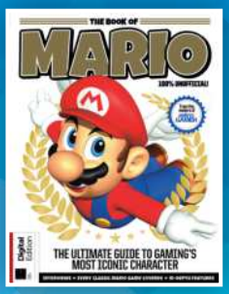

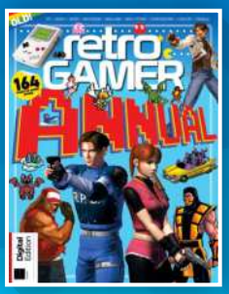

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